The PHOTOFACT Servicer

SET 434 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ MAR 1, 1959

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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7R1

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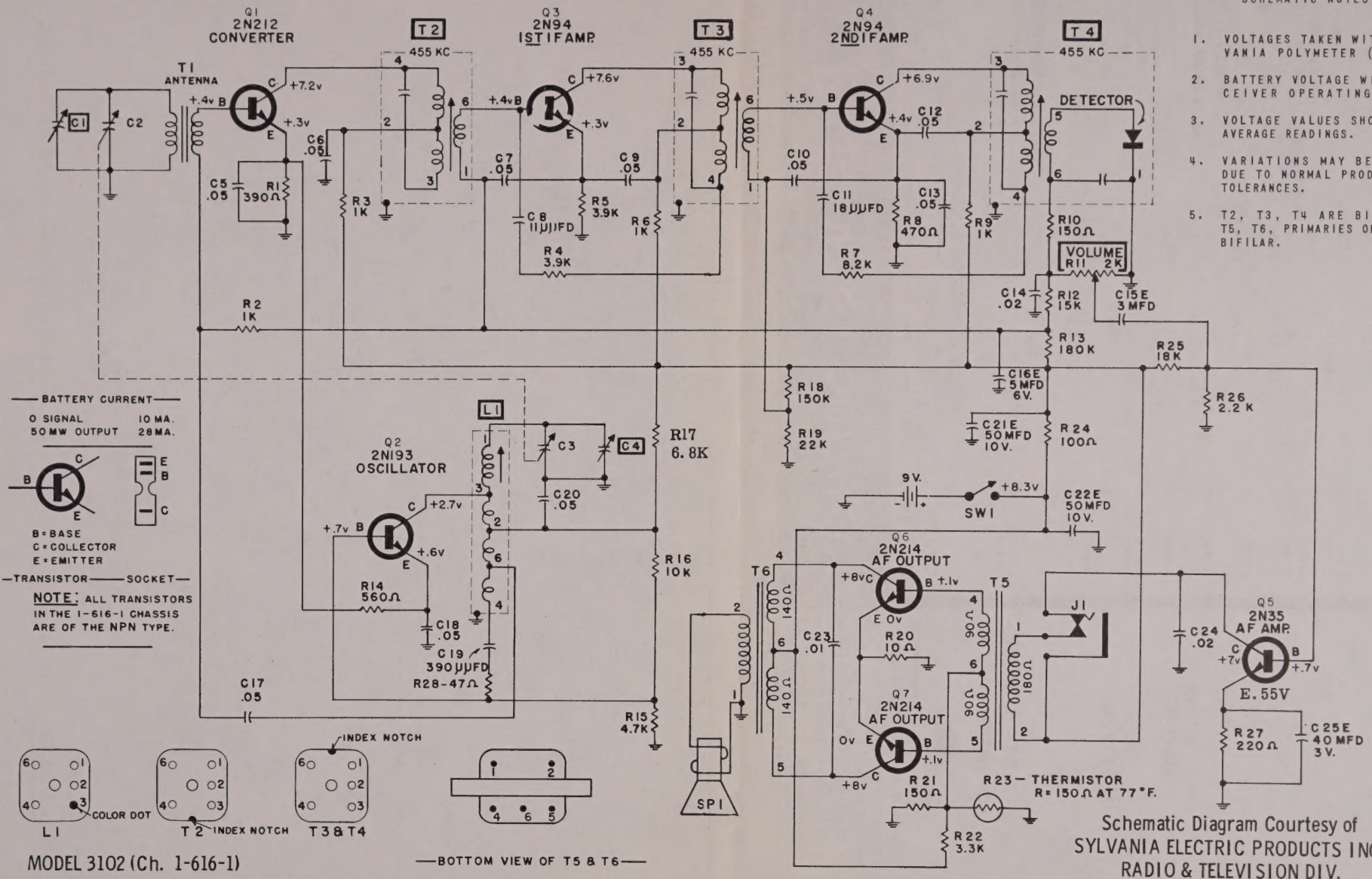
3102 (Ch. 1-616-1)

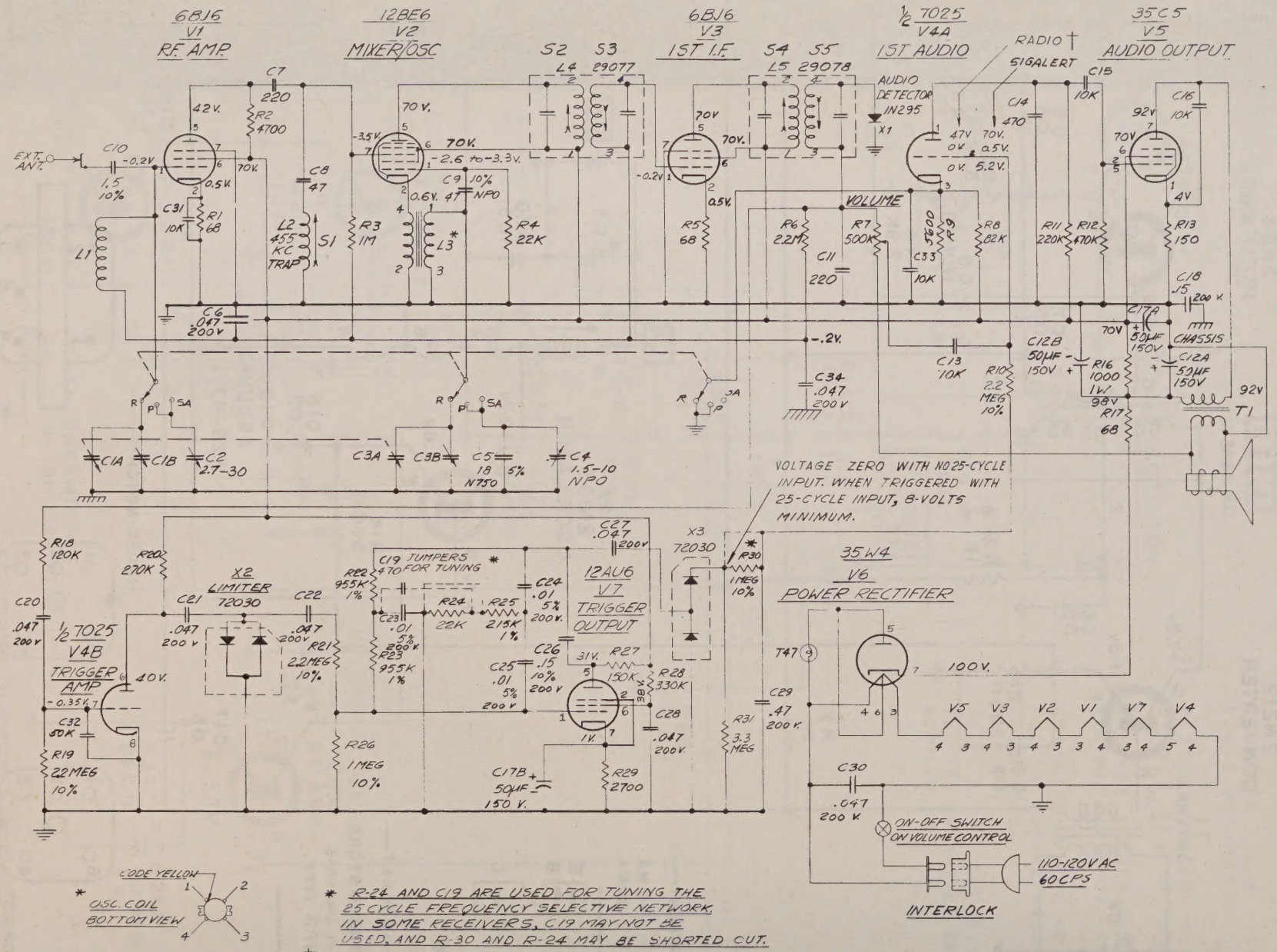


SCHEMATIC NOTES:

1. VOLTAGES TAKEN WITH SYLVANIA POLYMETER (VTVM).
2. BATTERY VOLTAGE WITH RECEIVER OPERATING 8.3V.
3. VOLTAGE VALUES SHOWN ARE AVERAGE READINGS.
4. VARIATIONS MAY BE NOTED DUE TO NORMAL PRODUCTION TOLERANCES.
5. T2, T3, T4 ARE BIFILAR. T5, T6, PRIMARIES ONLY ARE BIFILAR.

MODEL 3102 (Ch. 1-616-1)

Schematic Diagram Courtesy of
SYLVANIA ELECTRIC PRODUCTS INC.
RADIO & TELEVISION DIV.



MODEL 7R1
SIGALERT RADIO

Schematic Diagram Courtesy of PACKARD-BELL Corp.

PHOTOFACT* Folder

with CIRCUITRACE*

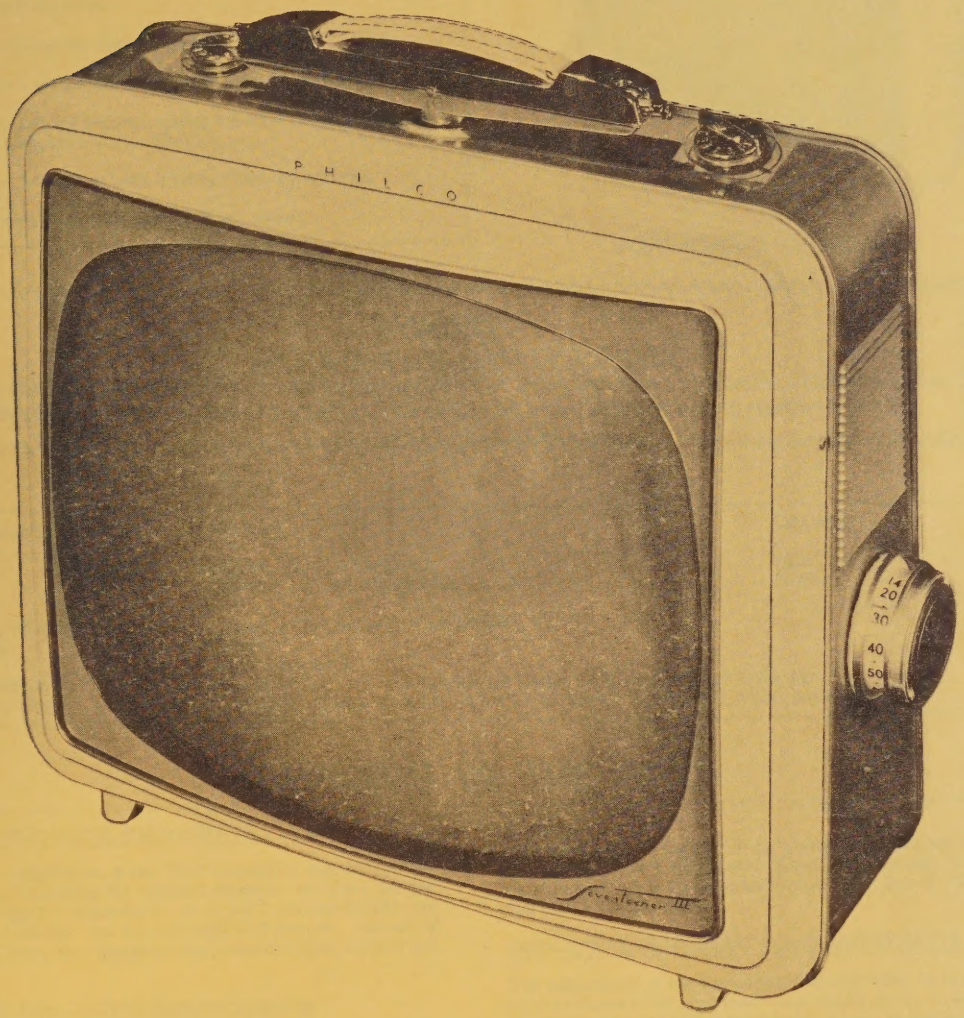
PHILCO MODELS G3050B, G, GL,
G3052BL, L, WL, UG3050B, G, GL,
UG3052BL, L, WL (Ch. 9H25, U)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

PHILCO MODELS G3050B, G, GL,
G3052BL, L, WL, UG3050B, G, GL,
UG3052BL, L, WL (Ch. 9H25, U)



MODEL UG3050GL (Ch. 9H25U)

PHILCO MODELS G3050B, G, GL,
G3052BL, L, WL, UG3050B, G, GL,
UG3052BL, L, WL (Ch. 9H25, U)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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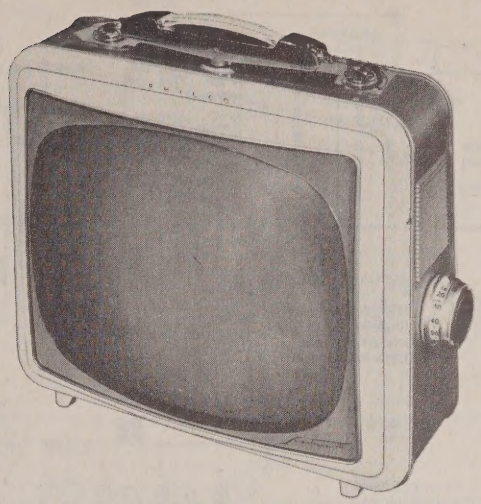
PHOTOFACT* Folder with CIRCUITRACE*

DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL

1. Remove 4 top and 1 side push-on type knobs.
2. Remove 7 metal screws holding rear cover. Remove the rear cover.
3. Remove speaker leads.
4. Remove 5 metal screws holding front bezel to cabinet. Remove front bezel.
5. Remove 5 bottom chassis bolts.
6. Remove 3 metal screws holding chassis at the rear.
7. Remove 2 metal screws holding top rear chassis bracket, tilt the bracket and remove.
8. Remove 5 metal screws holding front top bracket.
9. Remove wrap around cabinet from chassis.



MODEL UG3050GL (Ch. 9H25U)

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

PHILCO MODELS G3050B, G, GL, G3052BL, L, WL, UG3050B, G, GL, UG3052BL, L, WL (Ch. 9H25, U)

PHILCO MODELS G3050B, G, GL, G3052BL, L, WL, UG3050B, G, GL, UG3052BL, L, WL (Ch. 9H25, U)

TRADE NAME	Philco	MODELS	CHASSIS
		G3050B, G, GL, G3052BL, L, WL	9H25
		UG3050B, G, GL, UG3052BL, L, WL	9H25U
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.		
TYPE SET	Television Receiver		
TUBES	VHF-Sixteen, UHF-Seventeen		
POWER SUPPLY	105-120 Volts AC, 60 Cycle	RATING 135 Watts, 1.36 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator may be accomplished by removing the Channel Selector and Fine Tuning knobs. Slugs for channels 13, 6, 4 and 2 are accessible one at a time through the hole located at 2 o'clock. Adjust in sequence from the highest to the lowest for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 metal screws holding safety glass bezel to cabinet. Remove bezel by pulling out at bottom and lifting off. CAUTION: Use only mild soap and water to clean plastic safety glass.

SPECIAL ADJUSTMENTS

A. AGC
No provision is made to vary the AGC on this receiver.

B. Focus
The focus may be varied by connecting the lead from pin 6 of the picture tube to B+ or ground. Some versions may also use a Beam Alignment magnet for proper focusing.

C. Width
The width may be increased by connecting a jumper across R58, 6800Ω 1 watt Horizontal Output Tube Screen resistor, located on rear of sweep printed board just left of 17DQ6A, Horizontal Output tube.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Multivibrator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold and Horizontal Range at the center of their range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

FUSE DEVICE

A 5.6Ω fusible resistor (R68) is used for low voltage power supply protection. (For location, see tube placement chart.)

CENTERING

Centering may be accomplished by Horizontal and Vertical centering magnets located on the yoke rear cover.

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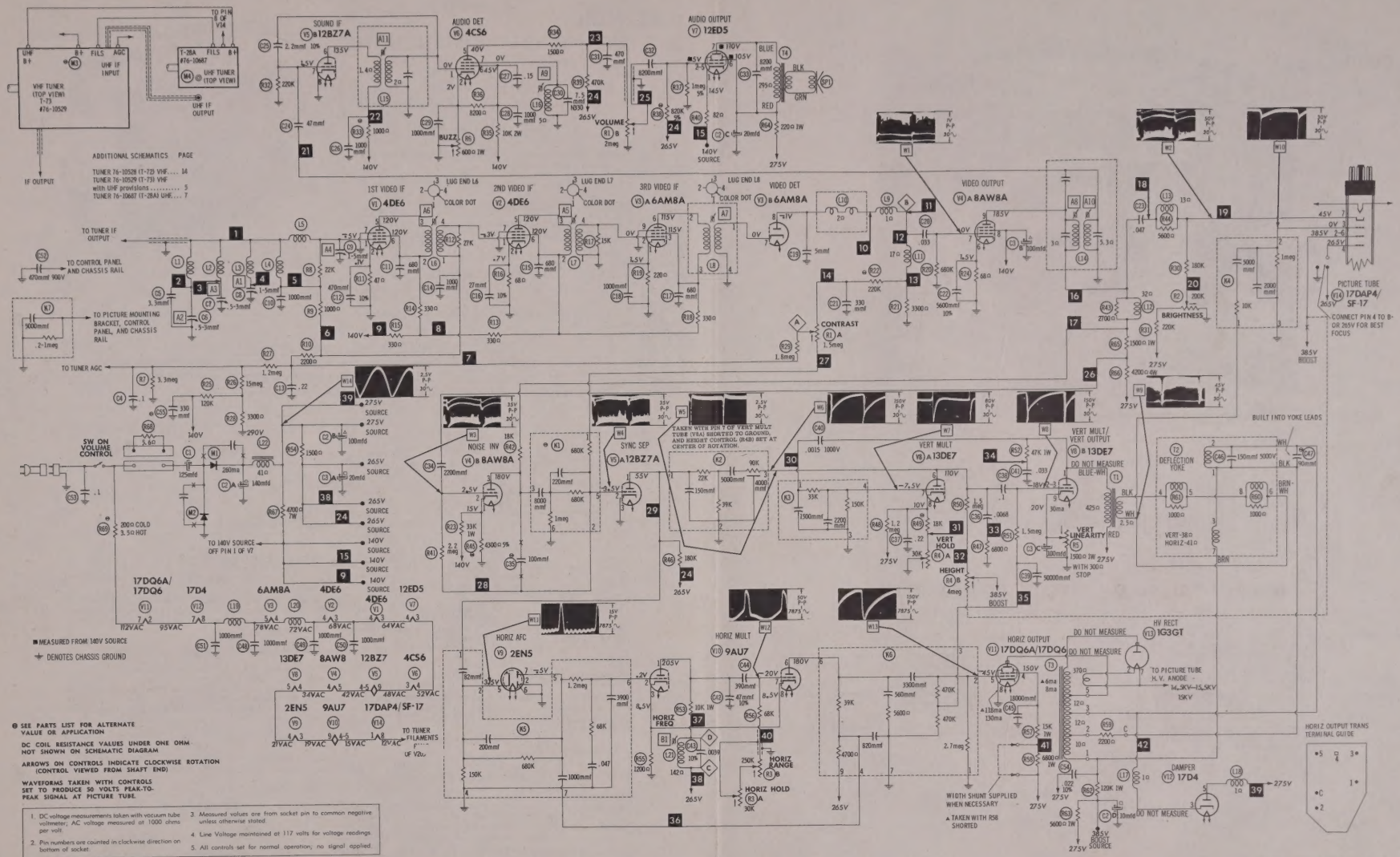
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TUNER 76-10529 (T-73) VHF
WITH UHF prewfelons 5
TUNER 76-10687 (T-28A) UHF.... 7
SOUND IF V5 12BZ7A
AUDIO DET V6 4CS6
AUDIO OUTPUT V7 12ED5
1ST VIDEO IF V1 4DE6
2ND VIDEO IF V2 4DE6
3RD VIDEO IF V3 6AM8A
VIDEO DET V3 6AM8A
VIDEO OUTPUT V4 8AW8A
NOISE INV V4 8AW8A
SYNC SEP V5 12BZ7A
VERT MULT V8 13DE7
VERT MULT/ VERT OUTPUT V8 13DE7
HORIZ AFC V5 2EN5
HORIZ MULT V10 9AU7
HORIZ OUTPUT V11 17DQ6A/17DQ6
HV RECT V13 1G3GT
DAMPER V12 17D4
PICTURE TUBE V14 17DAP4/ SF-17
VOLUME
BRIGHTNESS
CONTRAST
VERT HOLD
HEIGHT
VERT LINEARITY
HORIZ FREQ
HORIZ RANGE
HORIZ HOLD
SW ON VOLUME CONTROL
17DQ6A/ 17DQ6 17D4 6AM8A 4DE6 12ED5
13DE7 8AW8 12BZ7 4CS6
2EN5 9AU7 17DAP4/SF-17
TO TUNER FILAMENTS OF V2
MEASURED FROM 140V SOURCE
DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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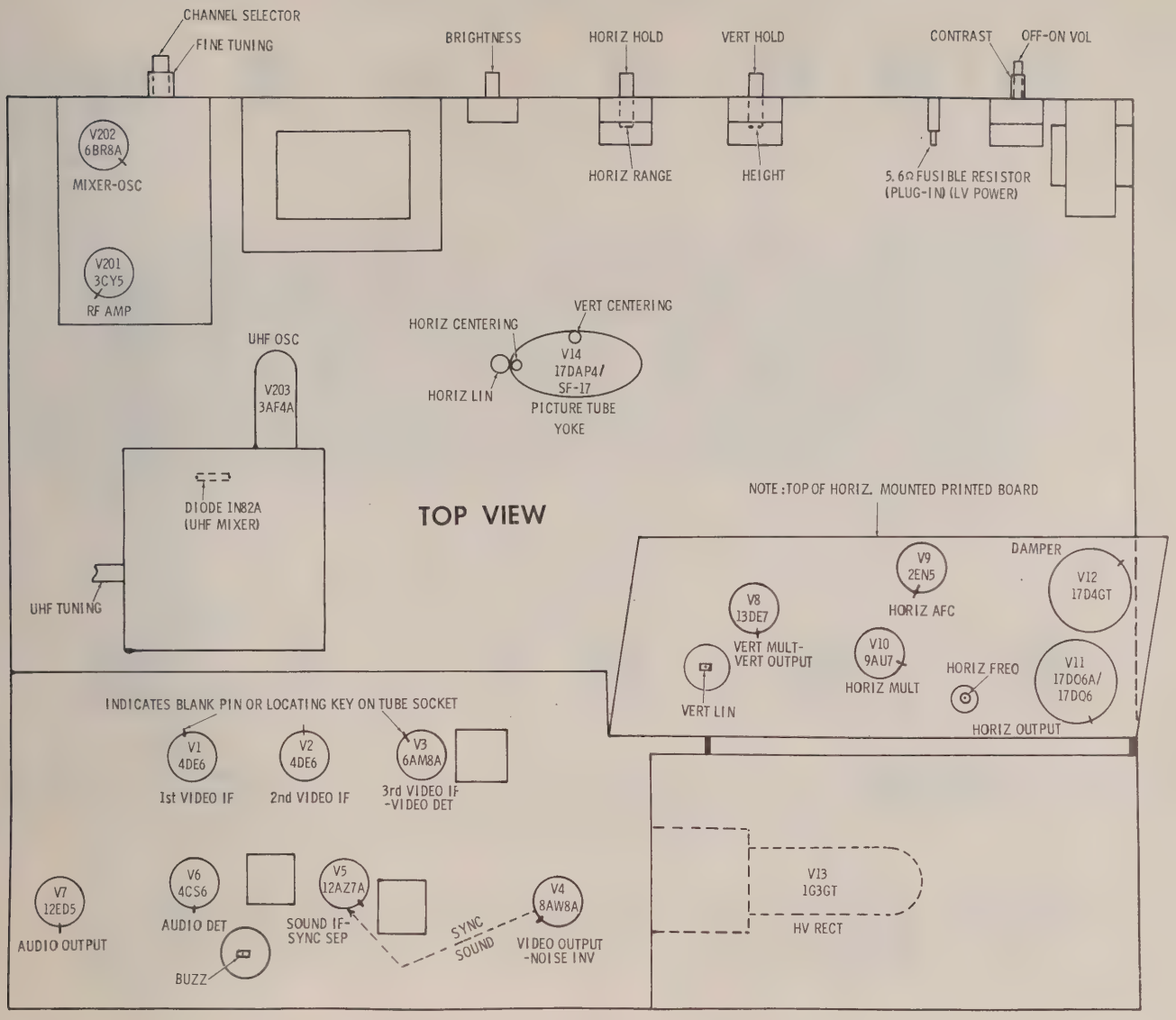
TAKEN WITH PIN 7 OF VERT MULT TUBE (V8A) SHORTED TO GROUND, AND HEIGHT CONTROL (R48) SET AT CENTER OF ROTATION.
DO NOT MEASURE BLUE-WH
BUILT INTO YOKE LEADS
CONNECT PIN 4 TO B- OR 265V FOR BEST FOCUS
WIDTH SHUNT SUPPLIED WHEN NECESSARY
▲TAKEN WITH R58 SHORTED
HORIZ OUTPUT TRANS TERMINAL GUIDE
PHILCO MODELS G3050B, G, GL, G3052BL, L, WL, UG3050B, G, GL, UG3052BL, L, WL (Ch. 9H25, U)

TUBE PLACEMENT CHART



PHILCO MODELS G3050B, G, GL, G3052BL, L, WL, UG3050B, G, GL, UG3052BL, L, WL (Ch. 9H25, U)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

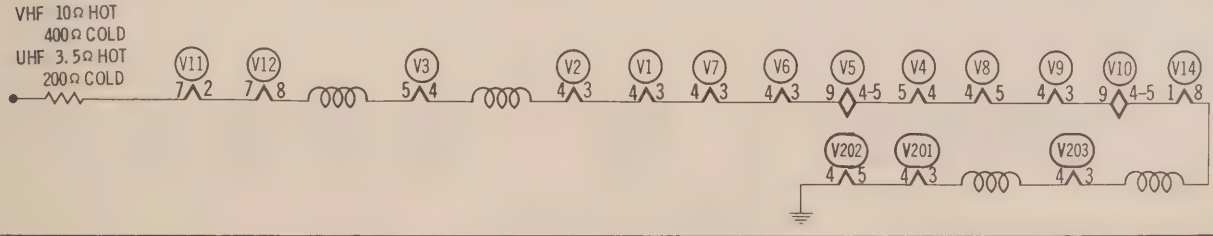
POWER SUPPLY FAILURE
No raster, no sound — Fusible Resistor (5.6Ω), Rectifier (B+)

SWEEP FAILURE
No raster, has sound — V9, V10, V11, V12, V13, V14
No vertical deflection — V8
Poor vert. linearity or foldover — V8
Poor horiz. linearity or foldover — V10, V11, V12
Narrow picture — V10, V11, V12, Rectifiers (B+)
Vert. off freq. — V8
Horiz. off freq. — V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster — V1, V2, V3, V4
No pic, no sound, has snow — V201, V202, V1, (V203, UHF Diode, UHF only)
No pic, has sound, has raster — V4, V14
Has pic, no sound — V5, V6, V7

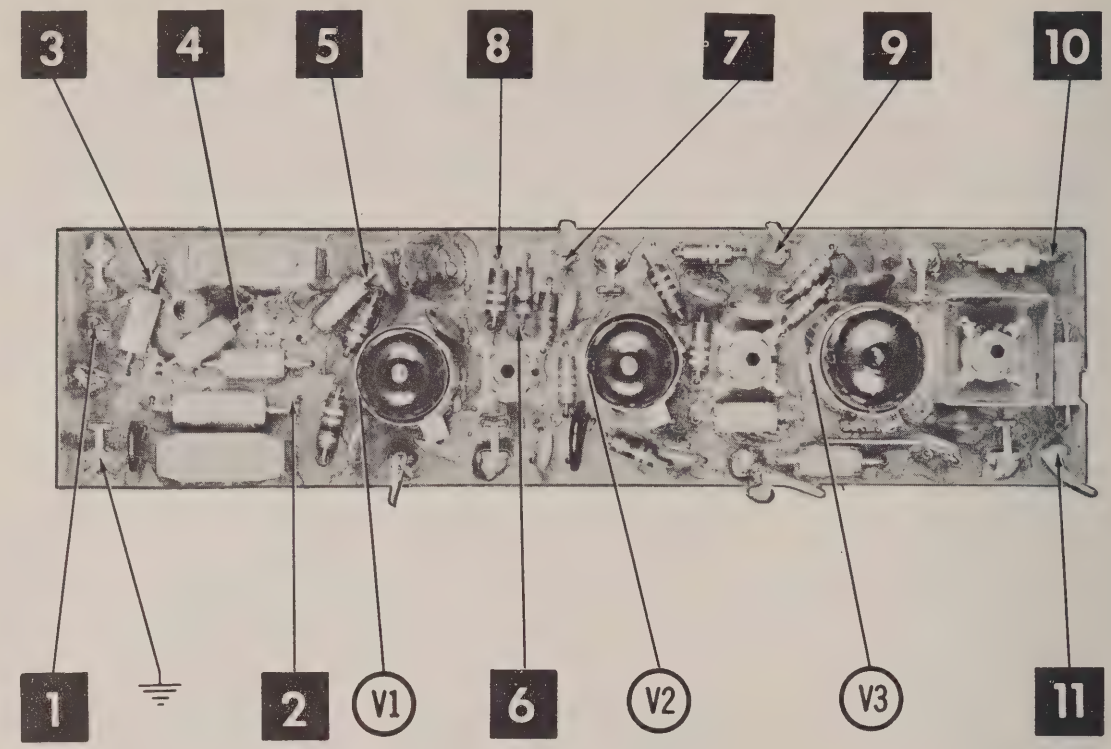
SYNC FAILURE
No vert. sync — V5
No horiz. sync — V5, V9
No vert. or horiz. sync — V5

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 1

CircuiTrace Numbers 1 thru 11

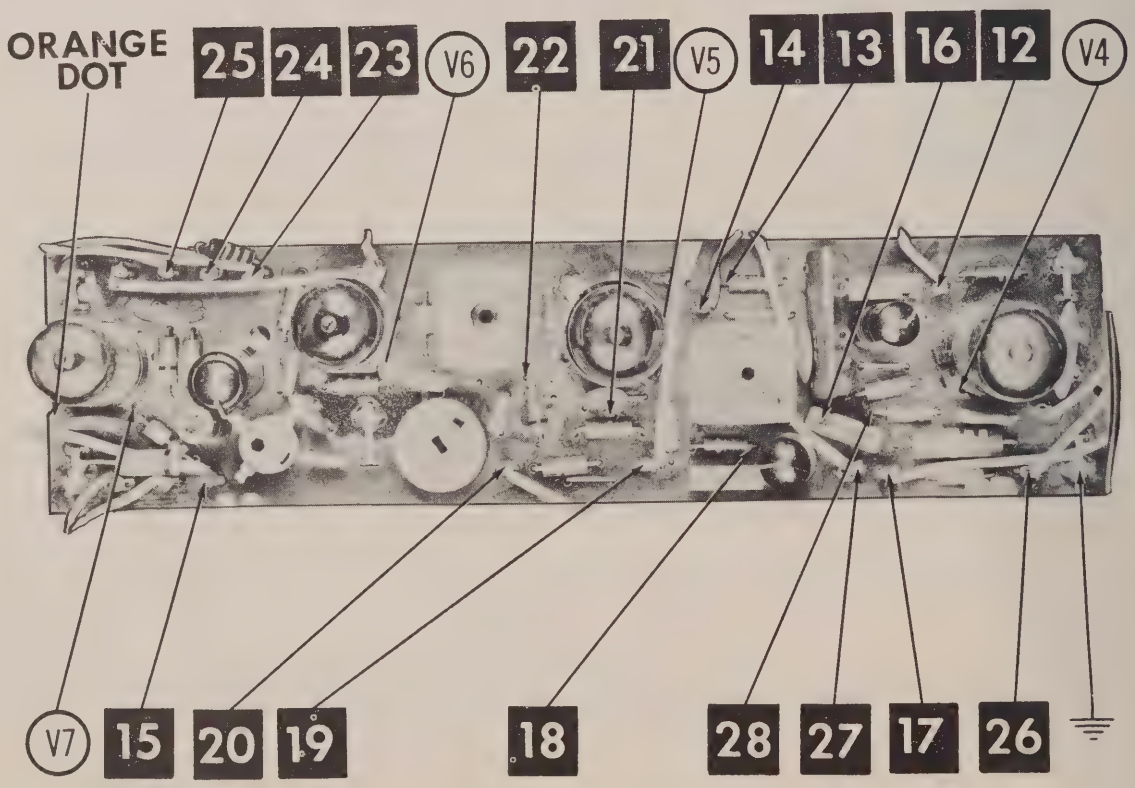


A Howard W. Sams CIRCUITRACE* Photo

VIDEO IF
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

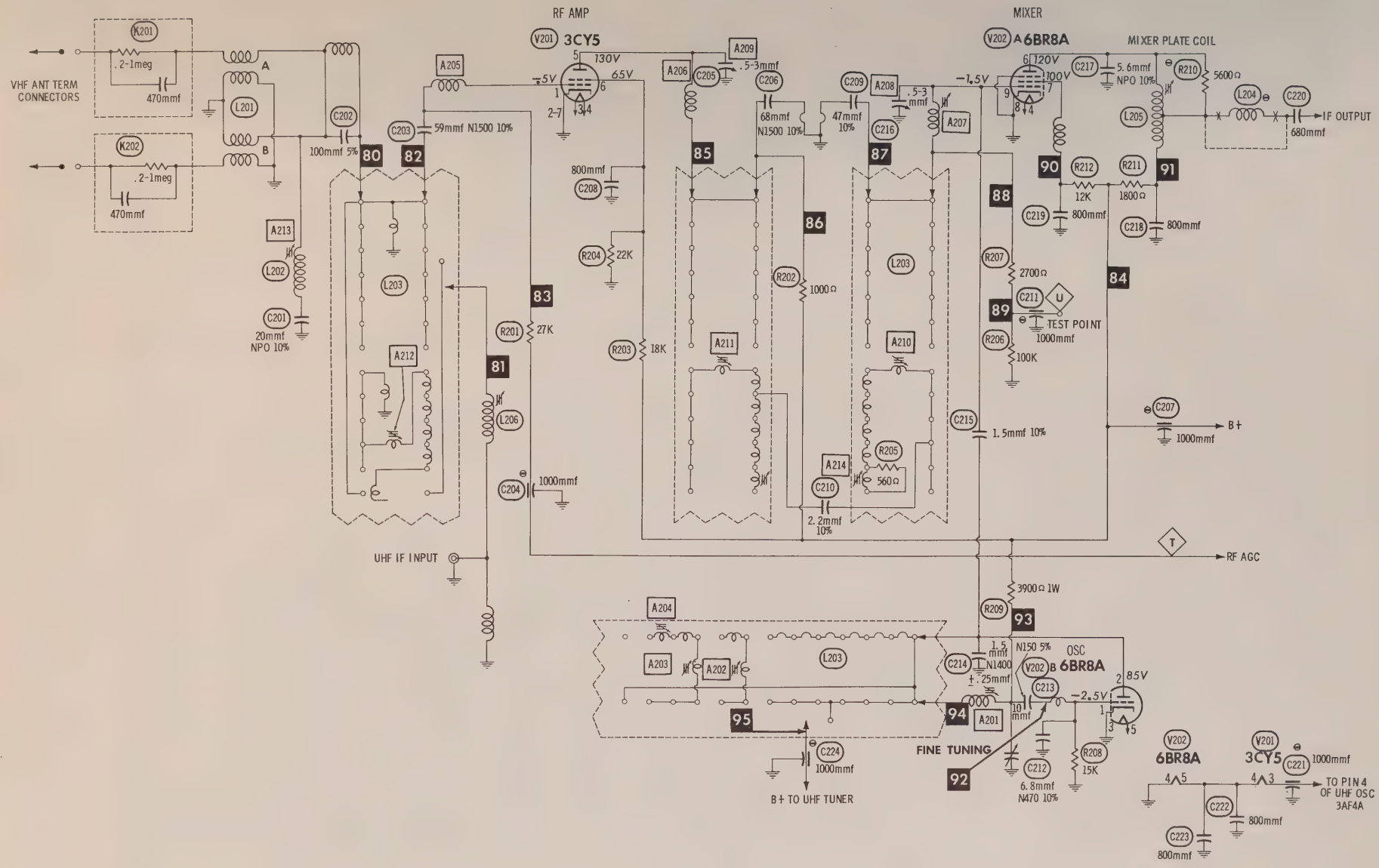
CircuiTrace Numbers 12 thru 28



A Howard W. Sams CIRCUITRACE* Photo

VIDEO & SOUND
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE*

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VHF TUNER WITH UHF PROVISIONS 76-10529 (T-73)

PHILCO MODELS G3050B, G, GL, G3052BL, L, WL, UG3050B, G, GL, UG3052BL, L, WL (Ch. 9H25, U)

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT FOR TUNER T-73

Use an ISOLATION TRANSFORMER to PROTECT the Test Equipment.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools:
A201 thru A204, A210 thru A214 ... General Cement #5009, 8195, 8274, 8275, 8728, 8987
Walsco #2531
A208, A209 ..... General Cement #5004, 5008, 5009
Walsco #2520
Mixer Plate Coil ..... General Cement #8606, 8606L, 8282, 9295
Walsco #2526, 2543, 2544, 2545

VHF OSCILLATOR ALIGNMENT

Set Fine Tuning to mid-range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	209.75MC (400∿ 30% AM Mod)	13	Across Video Det. load.	A201	Adjust for MINIMUM 400∿ indication.
2.	"	"	203.75MC 197.75MC 191.75MC 185.75MC 179.75MC 173.75MC	12 11 10 9 8 7	"	"	Adjust for MINIMUM 400∿ indication. Check that the remaining high channels are within the range of the Fine Tuning. If not, adjust the appropriate coil by bending toward or away from the wafer. Recheck to see that other channels have not been seriously affected.
3.	"	"	81.75MC 75.75MC	6 5	"	A202	Adjust for MINIMUM 400∿ indication.
4.	"	"	65.75MC 59.75MC	4 3	"	A203	"
5.	"	"	53.75MC	2	"	A204	"

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect a 10 to 20mmf capacitor across Mixer Plate Coil.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point Ⓤ. Low side to chassis.	A205, A206, A207	Coils not containing adjustable cores are adjusted by expanding or compressing coil turns. Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
7.	"	"	"	211.25MC 215.75MC	"	"	C206 & C209	Adjust spacing between C206 and C209. Moving ungrounded leads of C206 and C209 closer together narrows the bandwidth and moving them away increases the bandwidth. Adjust for bandwidth shown in Fig. 201.
8.	"	"	177MC	175.25MC	7	"	A208, A209	Adjust to obtain correct tilt on top of curve as in Fig. 202 to compensate for the tuning effect of channel 13.
9.	"	"	213MC	213MC	13	"		Retouch A206 and A207 for symmetrical response centered about marker. To retouch compress or expand cores SLIGHTLY. Repeat steps 8 and 9 alternately until optimum response is obtained on channels 7 & 13.
10.	"	"	85MC	85MC	6	"	A210, A211, A212	Turn A210 counterclockwise until a single peak appears. (DO NOT unscrew far enough to allow the core to fall out.) Adjust A211 until peak falls at 85MC. (It may be necessary to increase sweep generator output) Adjust A212 for maximum amplitude and symmetry of single peak.
11.	"	"	"	83.25MC 87.75MC	"	"		Retouch A210 and A211 for response similar to Fig. 203.
12.	"	"	"	43.5MC (400∿ 30% AM Mod)	4	Vert. Amp. across Video Det. load.	A213	Adjust for MINIMUM scope indication.

UHF IF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across UHF antenna terminals with 120Ω in each lead.	Not used	43.5MC (400∿ 30% AM Mod)	UHF	Vert. Amp. to point Ⓤ. Low side to chassis.	A213	Adjust for a symmetrical response.

UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

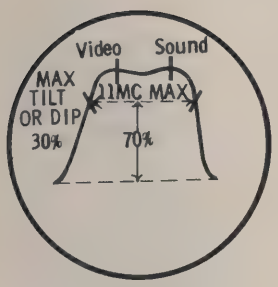


FIG.201

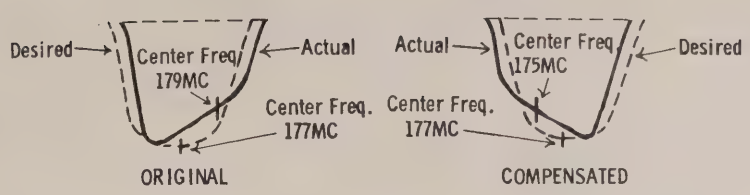


FIG.202

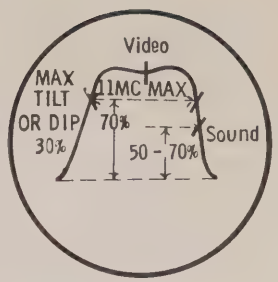
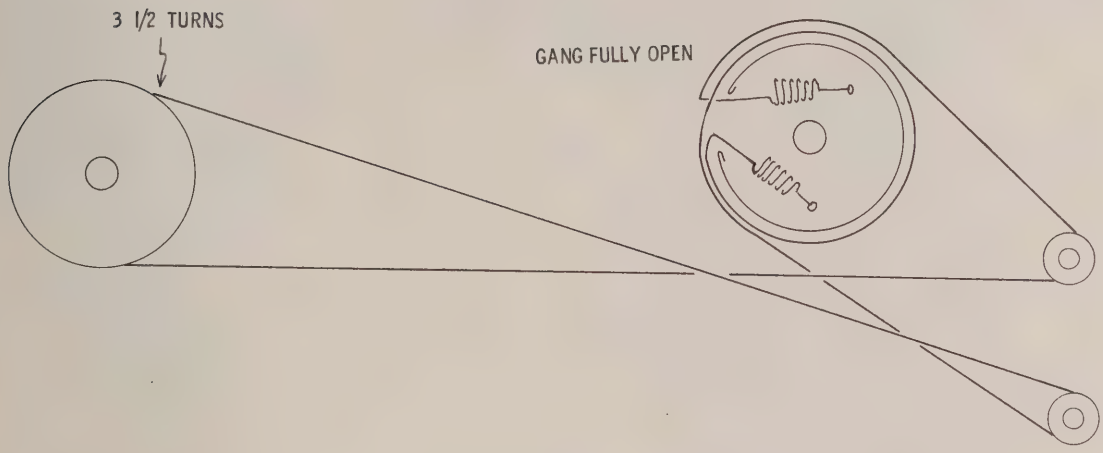
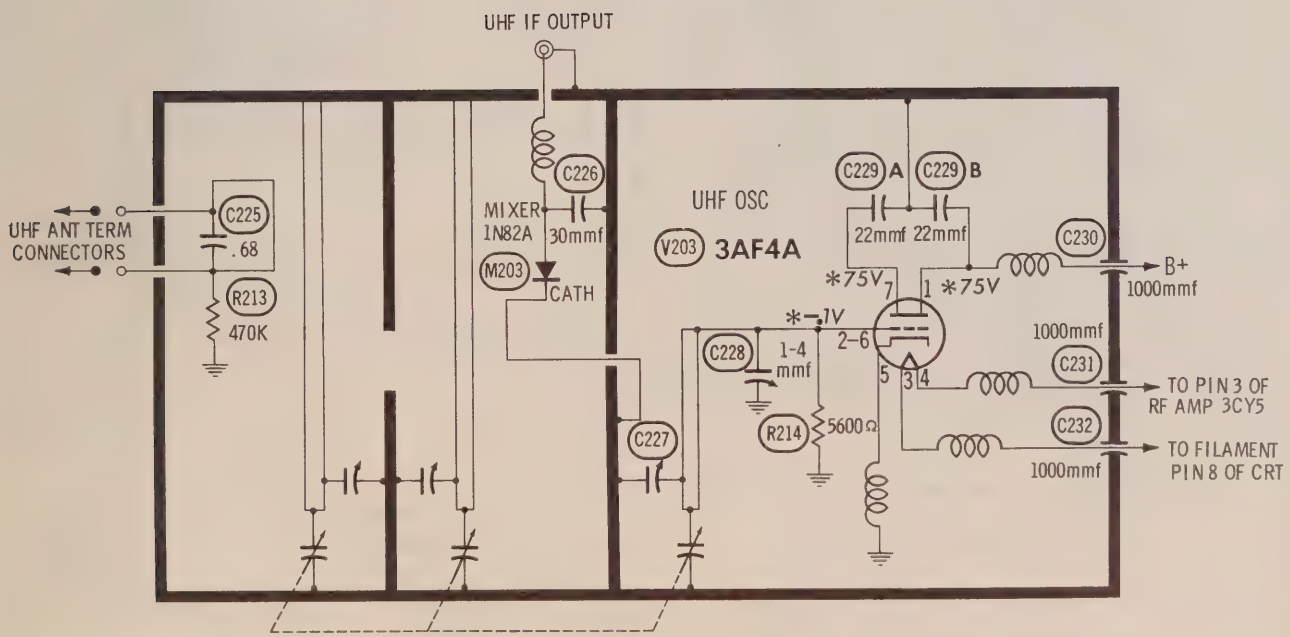


FIG. 203



UHF DRIVE CORD STRINGING



*MEASURED IN "UHF" POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER to PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A4 ... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A5 thru A11 GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of an 8 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	Not used	47.25MC (400∿ 30% AM)	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. (Across Video Det. load)	Mixer Plate Coil	Temporarily adjust for maximum 400∿ indication on scope.
2.	"	"	"	41.25MC	"	"	A1	Adjust for MINIMUM 400∿ indication on scope. Bias may be reduced as MINIMUM is approached.
3.	"	"	"	47.25MC	"	"	A2, A3	Adjust for MINIMUM 400∿ indication on scope. Bias may be reduced as MINIMUM is approached. Repeat steps 2 and 3.
4.	"	"	"	45.0MC	"	"	Mixer Plate Coil	Reset bias to correct level. Adjust for maximum 400∿ indication.
5.	"	"	"	42.7MC	"	"	A4, A5	Adjust A4 and A5 for maximum 400∿ indication.
6.	"	"	"	45.75MC	"	"	A6	Adjust for maximum 400∿ indication.
7.	"	"	"	44.4MC	"	"	A7	"
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	"	65.75MC	4	"	Fine Tuning	Adjust Fine Tuning for MINIMUM 400∿ indication on scope.
9.	"	"	69MC (10MC Swp)	67.25MC 70.5MC	"	"		Use only enough sweep generator output to provide a usable pattern on scope. Check for response similar to Fig. 1. If necessary, retouch Mixer Plate Coil to place 67.25MC marker at 50%. Position 70.5MC marker at 50% by retouching A5 and level top of curve with A7. DO NOT retouch A4 or A6.

4.5MC TRAP ALIGNMENT

Use a 4.5MC tuned detector similar to Fig. 2. Before aligning trap, connect the detector to an accurate source of 4.5MC signal and adjust the coil slug for maximum DC voltage output.
Set Contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001mfd	High side to point Ⓑ. Low side to chassis.	4.5MC (400∿ 30% AM)	Any non-interfering channel	DC probe thru detector probe (Fig. 2) to pin 7 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection on VTVM.

SOUND IF ALIGNMENT

Tune in a TV station, disconnect antenna and adjust Fine Tuning for best picture. DO NOT readjust Fine Tuning during balance of alignment.
Set Buzz control (R6) to mid-range.
Connect the antenna and adjust A9 for maximum sound. (A9 will peak at two points. The correct peak is the first peak reached as slug is backed out from full in position.)
Disconnect antenna and adjust A10, and A11 for maximum sound.
Turn Contrast control counterclockwise and adjust Buzz control (R6) for MINIMUM buzz.
Reset Contrast control and SLIGHTLY retouch A10, and A11 for maximum sound.
Connect antenna and adjust A9 for maximum sound.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 6 & 7

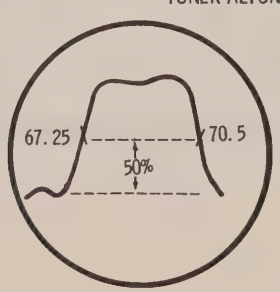


FIG. 1

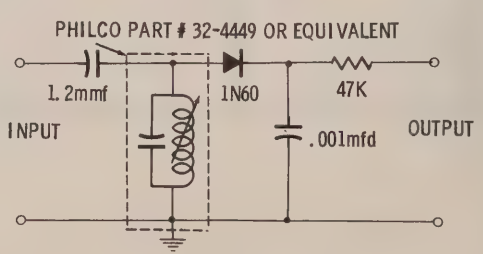


FIG. 2

CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp.	4DE6	
V2	2nd Video IF Amp.	4DE6	
V3	3rd Video IF Amp. - Video Det.	6AM8A	
V4	Video Output-Noise Inv.	6AW8A	
V5	Sound IF Amp. -Sync Sep.	12AZ7A	
V6	Audio Det.	4C98	
V7	Audio Output	12ED5	
V8	Vert Mult -Vert Output	13DE7	
V9	Horiz AFC	2EN5	
V10	Horiz. Mult.	9AU7	
V11	Horiz. Output	17DQ8A/ 17DQ6	
V12	Damper	17DM3T	
V13	HV Rect.	1G3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	PHILCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V14	17DAP4			17DAP4/ 8P-17 ①	① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP	VOLT	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	125	200	30-2586-76	AFH1-31-25	A0310	FP129.1	TMS-40		TVLS-1470 *
C2A	140	350	30-2590-41						TVLS-4705, 5*
B	100	300							
C	20	300							
D	80	450							
C3A	220	300	30-2590-30	AFH3-177-60					TVLS-3560.10 *
B	100	200							
C	100	50							

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No	SPRAGUE PART No.	
C4	.1	200	30-4650-47	P288N-1		CUB2P1	GEM-201	2TM-P1	
C5	3.3		30-1263-38	NPO-DI 3.3	DTZ-3R3	CUB1P1	CNO-533	5TCCB-V33	
C6	.5-3		31-8534-1		829-3				
C7	.5-3		31-8534-1		829-3				
C8	1-5		31-8535-2		829-6				
C9	1-5		31-8535-2		829-6				
C10	1000		30-1262-11	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C11	680		30-1262-15	BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C12	470		30-1262-18	DI-470	DD-471	BYA10T47	JL-347	5GA-T47S 10% *	10%
C13	.22	200	30-4678-49	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C14	1000		30-1262-11	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C15	680		30-1262-15	BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C16	27		30-1263-6	DI-27	DD-270	L10Q27	CNO-427	5TCC-Q27S 10% *	10%
C17	680		30-1262-15	BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C18	1000		30-1262-11	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C19	5		30-1263	DI-5	DD-050	L10V5		5TCCB-V5S *	
C20	.033	200	30-4650-44	P288N-033		CUB6S3	GEM-6133	6TM-S33	
C21	330		30-1238-24	BPD-00033	MD-331	L10T33	B-333	5GA-T33	
C22	5600		30-1262-47	DI-5600				5GA-D56S 10% *	10%
C23	.047	400	30-4650-45	P488N-047		CUB4S47	GEM-4347	4TM-S47	
C24	47		30-1263-22	BPD-000047	DD-470	L10Q47	CNO-447	5GA-Q47	
C25	2.2		30-1231-27	NPO-SI 2.2	TCZ-2R2	CTA5Y22C	CNO-522	5TCCB-Y22S 10% *	10%
C26	1000		30-1262-13	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C27	.15	200	30-4650-48	P288N-15		CUB2P15	GEM-2015	2TM-P15	
C28	1000		30-1262-11	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C29	1000		30-1262-11	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C30	7.5		30-1263-39						N330
C31	470		30-1262-32	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C32	8200		30-1262-1	BPD-0082	DDH-802		B-282	5GA-D82S *	
C33	8200		30-1262-1	BPD-0082	DDH-802		B-282	5GA-D82S *	
C34	2200		30-1263-7	BPD-0082	DD-222	BYA10D22	B-322	5HK-D22	
C35	100			BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	①
C36	.15	200	30-4650-48	P288N-15		CUB2P15	GEM-2015	2TM-P15	
C37	.22	100	30-4678-49	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C38	.1	400	30-4650-47	P488N-1		CUB4P1	GEM-411 TA-150	4TM-P1	
C39	50000		30-1372-14		DF-503				
C40	.0015	1000	30-4650-87	P1088N-0015		CUB10D15	GEM-10215	10TM-D15	
C41	.033	400	30-4650-44	P488N-033		CUB6S33	GEM-6133	6TM-S33	
C42	47		30-1264-3	1469-000047		32R5Q47		MS-447	10%
C43	.0039	600	30-4651-33					6TM-D39S 10% *	10%
C44	390		30-1264-1			5R5T39		MS-339	10%
C45	18000		30-1262-36		DDM-303	BYA862	BT-120	5GA-S36 *	
C46	150	5000	30-1246-15				68V-318	50GA-T15S *	
C47	90								②
C48	1000		30-1262-11	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C49	1000		30-1262-11	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C50	1000		30-1262-11	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C51	1000		30-1238-13	BPD-001	DD-102	BYA10D1M	B-210	5HK-DI	
C52	470	900	30-1277-1		DD-471	BYA10T47	B-347	5GA-T47	
C53	.1	600	30-4650-64	P688N-1		CUB6P1	GEM-601	6TM-P1	
C54	.022	400	30-4650-43					4TM-S22S 10% *	10%
C55	330			SI 330	DD-331	LT6T33	B-333	5GA-T33	③

* Not normally in distributors stock. Available thru distributor on order to manufacturer.
① Not used in some versions.
② 90mmf built-in yoke leads.
③ Not used in Ch. 9H25. Some versions of Ch. 9H25U may use 680mmf in this application (Part #62-18500501).

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1 5meg		33-5592-39		RTV-680		† (UE3921-5	Contrast
B	2meg							Volume
C	Switch							
R2A	200K		33-5592-31	FI-34			FA354L	Brightness
B	Shaft			Not Req.			C6-1250	
R3A	30K		33-5592-38					Horiz. Hold
B	250K							Horiz. Range
R4A	30K		33-5592-37					Vert. Hold
B	4meg							Height
R5	15000	1(WW)	33-5591-10				FL-1.5K *	Vert. Lin. with 300Ω stop
R6	400Ω	1(WW)	33-5591-6					Buzz

† "STA-LOC" equivalent: FA156R, OB125, RU355A, IM635, U541.
* Use 300Ω resistor between case and ground.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PHILCO Part No.	NOTES
	OHMS	WATT		
R7	3.3meg		66-5338340	
R8	22K		66-3228340	
R9	1000Ω		66-2108340	
R10	2200Ω		66-2228340	
R11	47Ω		66-0478340	
R12	27K		66-3278340	
R13	330Ω		66-1338340	
R14	330Ω		66-1338340	
R15	330Ω		66-1338340	
R16	68Ω		66-0688340	
R17	15K		66-3158340	
R18	330Ω		66-1338340	
R19	220Ω		66-1228340	
R20	680K		66-4688340	
R21	3300Ω		66-2338340	
R22	220K		66-4228340	Note 1
R23	33K	1	66-3334340	
R24	68Ω		66-0688340	
R25	120K		66-4128340	
R26	15meg		66-5158340	
R27	1.2meg		66-5128340	
R28	3300Ω		66-2338340	
R29	1.8meg		66-5188340	
R30	180K		66-4188340	
R31	220K		66-4228340	
R32	220K		66-4228340	
R33	1000Ω		66-2108340	Note 2
R34	1500Ω		66-2158340	
R35	10K	2	66-3105340	
R36	8200Ω		66-2828340	
R37	1meg 5%		66-5108240	
R38	820K 5%		66-4828240	Note 3

ITEM No.	RATING		PHILCO Part No	NOTES
	OHMS	WATT		
R39	470K		66-4478340	
R40	82Ω		66-0828340	
R41	2.2meg		66-5228340	
R42	18K		66-3188340	
R43	2700Ω		66-2278340	
R44	5600Ω		66-2568340	
R45	43000Ω 5%		66-2438240	Note 4
R46	180K		66-4188340	
R47	6800Ω		66-2688340	
R48	1.2meg		66-5128340	
R49	18K		66-3188340	Note 5
R50	1.5meg		66-5158340	
R51	1.5meg		66-5158340	
R52	47K	1	66-3474340	
R53	10K	1	66-3104340	
R54	1500Ω		66-2158340	
R55	1200Ω		66-2128340	
R56	68K		66-3688340	
R57	15K	1	66-3154340	
R58	6800Ω	1	66-2684340	
R59	2200Ω		66-2228340	
R60	1000Ω		66-2108340	
R61	1000Ω		66-2108340	
R62	120K	1	66-4124340	
R63	5600Ω	1	66-3564340	
R64	220Ω	1	66-1234340	
R65	150Ω	1	66-2154340	
R66	4200Ω	4	33-1353-30	
R67	4700Ω	7	33-1335-144	
R68	5.6Ω		33-1366-3	
R69	200Ω Cold 3.5Ω Hot		33-1343-12	Note 6

Note 1. Run 1 used 180K in this application (Part #4188340).
Note 2. Runs 1 and 2 use 10K in this application (Part #66-3108340).
Note 3. Run 1 used 910K 5% in this application (Part #66-4918240).
Note 4. Run 1 used 39000Ω in this application (Part #66-2398340).
Note 5. Some versions may use 12K in this application (Part #66-3128340).
Note 6. Ch. 9H25 uses 400Ω Cold, 10Ω Hot in this application (Part #33-1343-15).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		PHILCO Part No	Meissner Part No	Merit Part No	Miller Part No	Ram Part No	NOTES
L1	47.25MC Trap Coil	32-4645-32	19-1001	BC-582	4604		1.5 Microhenries
L2	47.25MC Trap Coil	32-4645-19	19-1002	BC-583	4606		2.6 Microhenries
L3	41.25MC Trap Coil	32-4645-34					3 Microhenries
L4	RF Choke	32-4645-20			4584		.23 Microhenry
L5	1st Video IF	32-4645-36	19-3001	TV-189	6175	VP-9	.88 Microhenry
L6	2nd Video IF	32-4686-2					
L7	3rd Video IF	32-4686-3					
L8	4th Video IF	32-4686-3					
L9	Resonant Choke	32-4645-7					3 Microhenries
L10	Resonant Choke	32-4674-1					22 Microhenries
L11	Shunt Peaking Coil	32-4762-13	19-3600	TV-204	6144		580 Microhenries
L12	Shunt Peaking Coil	32-4762-14	19-3580	TV-206	6148		660 Microhenries
L13	Series Peaking Coil	32-4762-11	19-3375	TV-201	6134		390 Microhenries
L14	1st Sound IF	32-4686-7					
L15	2nd Sound IF	32-4706-1	17-3489		6203-PC		
L16	Quadrature Coil	32-4644-14					
L17	Resonant Choke	32-4112-61					
L18	Resonant Choke	32-4112-61					
L19	Fil. Choke	32-4645-35					
L20	Fil. Choke	32-4645-35					

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L21	142Ω		32-4754-3						Horiz. Freq.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~(L)	PHILCO PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No.
L22	.280A	41Ω	1.3 Hy.	32-8710-6					28C44	C-23X

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA								
		PHILCO PART No.	Halldorson PART No	Merit PART No.	Ram PART No.	Rogers PART No	Stancor PART No.	Thordarson PART No.	Triad PART No
T1	Vert Output	32-8829-4	Z1900 ①	A-2823	V307		A-8144	26S72	A-108X
T2	Yoke-Horiz (24MH) (1100-Vert (39MH) Rear Cover & Centering Device with Yoke Clamp	76-10508-3 ② 76-10513-2						Y-53 ③	
T3	Horiz. Output	32-8855-1							

① Use 8 : 1 turns ratio.
② Includes leads with 90mmf built-in capacity.
③ Use original rear cover and centering device. Use original leads.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	5200Ω	3-4Ω	32-8747-3	Z1000 ①	A-3026	AU-601 ①	A-3877 ①	24S51 ①	S-6X	① Drill new mounting hole

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP	PHILCO PART No	QUAM PART No	
SP1	4"	PM	3-4Ω	36-1855-17	4A1	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PHILCO PART No.	REPLACEMENT DATA	
K1	Sync Coupling	8000mmf, 220mmf, 680K 680K, 1meg	30-6525-2 ①		
K2	Vert. Integrator	150mmf, 4000mmf, 5000mmf, 22K, 39K, 90K	30-6030-5	Sprague	V-22
K3	Vert. Feedback	1500mmf, 2200mmf, 33K, 150K	30-6509-2		
K4	Vert Retrace	2000mmf, 5000mmf, 10K, 1meg	30-6024-1	Centralab	PC-336
K5	Horiz. AFC	82mmf, 200mmf, 1000mmf, 3900mmf, .047@ 50V, 680K, 68K, 1.2meg, 150K	30-6035-1	Sprague	C-15
K6	Horiz. Coupling	560mmf, 820mmf, 3300mmf, 39K, 4700Ω, 5600Ω, 47OK, 470K, 2.7meg	30-6526-2		
K7	Control Isolation	5000mmf, .2-1meg	30-6028-2	Sprague	AC1-4

① Run 1 used 8000mmf, 180mmf, 680K, 680K, 1meg Part #30-6525-1.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	PHILCO PART No	FEDERAL PART No	GENERAL ELECTRIC PART No	INTERNATIONAL PART No	SARKES TARZIAN PART No.	
M1	.280A	34-8048-1 ①	HF504 ①	IN1008 ②	SD-500 ①	M500 ①	① Silicon Type
M2	.280A	34-8048-1 ①	HF504 ①	IN1008 ②	SD-500 ①	M500 ①	② Germanium Type

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M3	Tuner	76-10529	(T-73) VHF with UHF provisions, Ch. 9H25U
	Tuner	76-10528	(T-72) VHF, Ch. 9H25
M4	Tuner	76-10687	(T-28A) UHF, Ch. 9H25U
	Magnet	54-8349-1	Beam alignment when required for focusing.
	Printed Board	54-8655-1	Video IF
	Printed Board	54-8684	Video & Sound, Specify color of paint dot
	Printed Board	54-8668	Sweep

CABINETS & CABINET PARTS

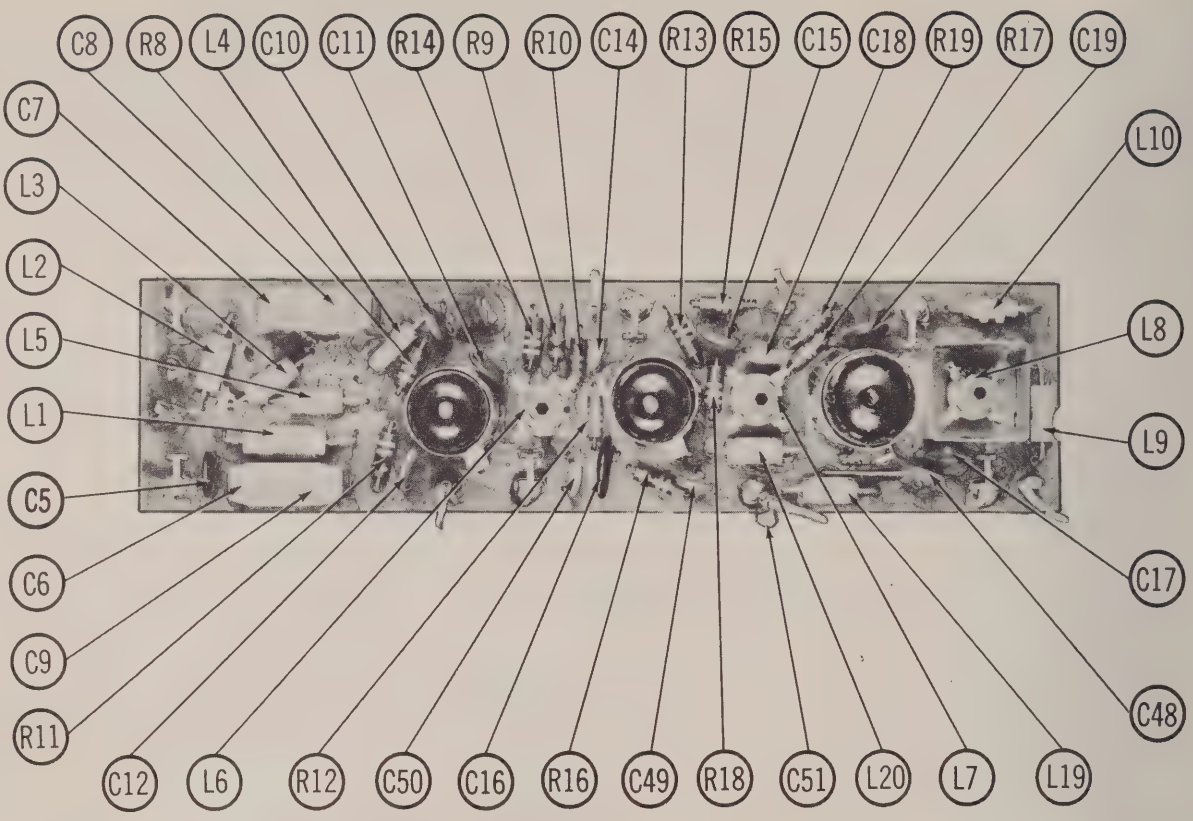
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

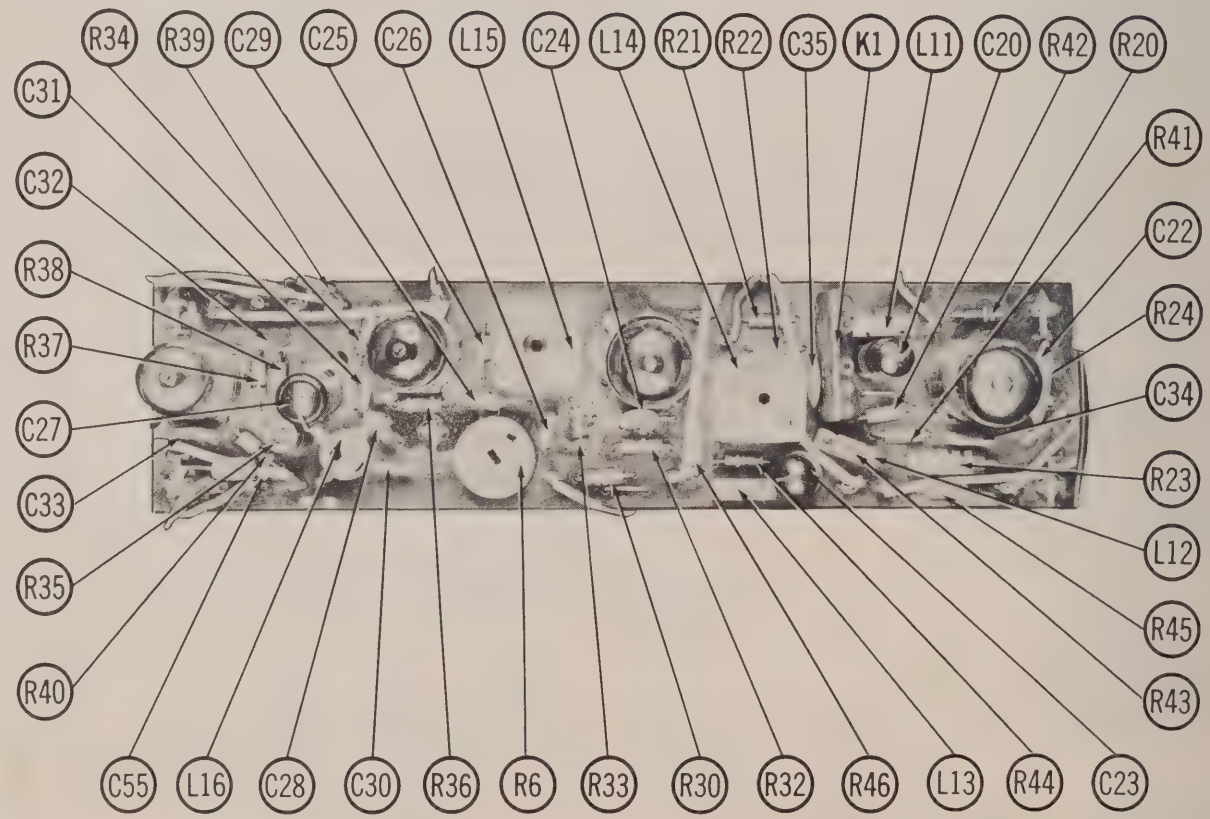
High Voltage Lead	Use BELDEN No. 8809
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8474
300Ω Tuner Input Lead	Use BELDEN No. 8235
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8464 (Round) - 4 Conductor 8468 (Round) - 5 Conductor 8469 (Round) - 8 Conductor

PHILCO MODELS G3030B, G, GL, G3032BL, L, WL, UG3030B, G, GL, UG3032BL, L, WL (Ch. 9H25, U)

FOLDER 1

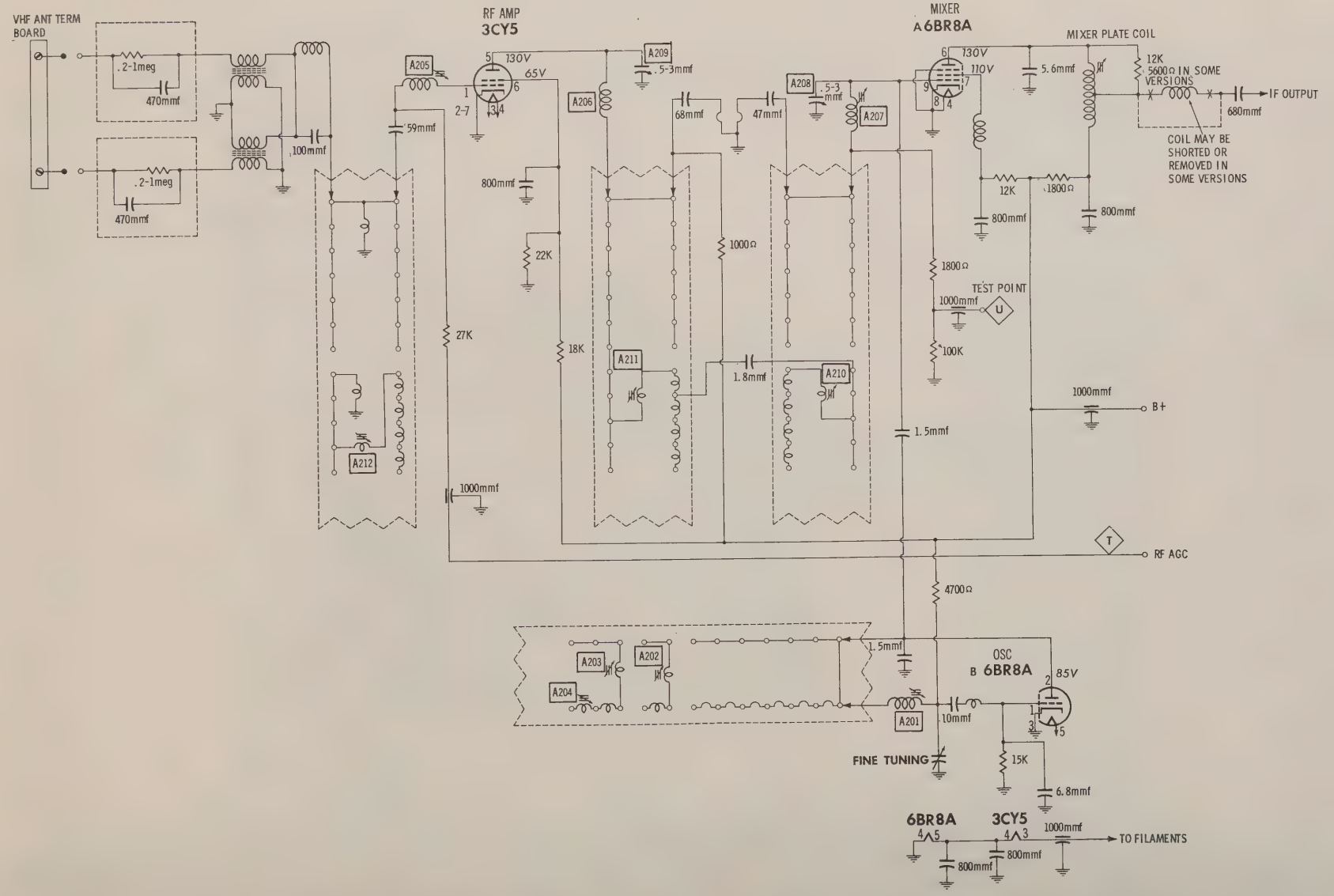


VIDEO IF PRINTED BOARD



VIDEO & SOUND PRINTED BOARD

VHF TUNER 76-10529 (T-73) TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER 76-10528 (T-72)

TUNER PARTS LIST AND DESCRIPTIONS

76-10529 (T-73)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	3CY5	
V202	Mixer-Osc.	6BR8A	
V203	UHF Osc.	3AF4A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	20		76-10897-9	NPO-DI 20	DTZ-20	C10Q2C		5TCC-Q2S 10% *	NPO 10%
C202	100		76-10896-26		DTZ-100		CNO-310	5GA-T1S 5% *	5%
C203	59		76-10896-27						N1500 10%
C204	1000		30-1268-7 †	EF-001	MFT-1000			503C-D1	
C205	.5-3		31-6520-1		829-3		CTA-565		
C206	68		76-10896-29		TCL-68				N1500 10%
C207	1000		30-1268-7 †	EF-001	MFT-1000			503C-D1	
C208	800		30-1238-7	BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C209	47		76-10896-30	DI-47	DD-470	L10Q47	CNO-447	5GA-Q47S 10% *	10%
C210	2.2		76-10897-8		DTZ-2R2	C10V22C	CNO-522	5TCCB-V22S 10%*	10%
C211	1000		30-1268-7 †	EF-001	MFT-1000			503C-D1	
C212	6.8		76-10896-32						N470 10%
C213	10		76-10896-31						N150 5%
C214	1.5		30-1224-133						N1400 ±.25mmf
C215	1.5		30-1221-7		TCZ-1R5	CTA6V15C	ZT-5515	5TCCB-V15S 10%*	10%
C216	.5-3		76-10896-28		829-3		CTA-565		
C217	5.6		76-10896-35					5TCCB-V56S 10%*	NPO 10%
C218	800		36-1238-7	BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C219	800		30-1238-7	BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C220	680		76-10896-34	BPD-00068	DD-681	L10T68	B-368	5GA-T68	
C221	1000		30-1268-7 †	EF-001	MFT-1000			503C-D1	
C222	800		30-1238-7	BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C223	800		30-1238-7	BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C224	1000		30-1268-7 †	EF-001	MFT-1000			503C-D1	
C225	.68		30-1221-11		TCZ-R68				
C226	30		76-10170						
C227			3W27872						
C228	1-4		31-6520						
C229A	22		30-1275-2	DI-22	DD-220	L10Q22	CNO-422	5GA-Q22	
B	22			DI-22	DD-220	L10Q22	CNO-422	5GA-Q22	
C230	1000		30-1258	EF-001	MFT-1000		B-210	503C-D1	
C231	1000		30-1258	EF-001	MFT-1000		B-210	503C-D1	
C232	1000		30-1258	EF-001	MFT-1000		B-210	503C-D1	

† Part of M2. * Not normally in distributors stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	PHILCO PART No.	NOTES
R201	27K		66-3278340	
R202	1000Ω		66-2108340	
R203	18K		66-3188340	
R204	22K		66-3228340	
R205	560Ω		76-10897-10	
R206	100K		66-4108340	
R207	2700Ω		66-2278340	
R208	15K		66-3158340	
R209	3900Ω	1	66-2394340	
R210	5600Ω		66-2568340	Note 1
R211	1800Ω		66-2188340	
R212	12K		66-3128340	
R213	470K		66-4478340	
R214	5600Ω		66-2568340	

Note 1. Tuners stamped Run 2 use 12K in this application (Part #66-3128340).

COILS (RF-IF)

ITEM No.	USE	PHILCO PART No.	NOTES
L201A	Ant. Trans.	†	
B	Trap Coil	†	
L202	Trap Coil		
L203	Ant. RF Mixer Grid & Osc. Coils	Channel 2-13 Includes rotor assy.	
L204	IF Link Coil		Note 1
L205	Mixer Plate Coil	76-10896-36	
L206	UHF IF Input Coil	76-10897-11	

† Part of M201. Note 1. Not used in tuners marked Run 2.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PHILCO PART No.	REPLACEMENT DATA	
K201	Ant. Input	.2-1meg, 470mmf	30-6028-1 †	Centralab	RC-471
				Sprague	AC1-1
K202	Ant. Input	.2-1meg, 470mmf	30-6028-1 †	Centralab	RC-471
				Sprague	AC1-1

† Part of M201.

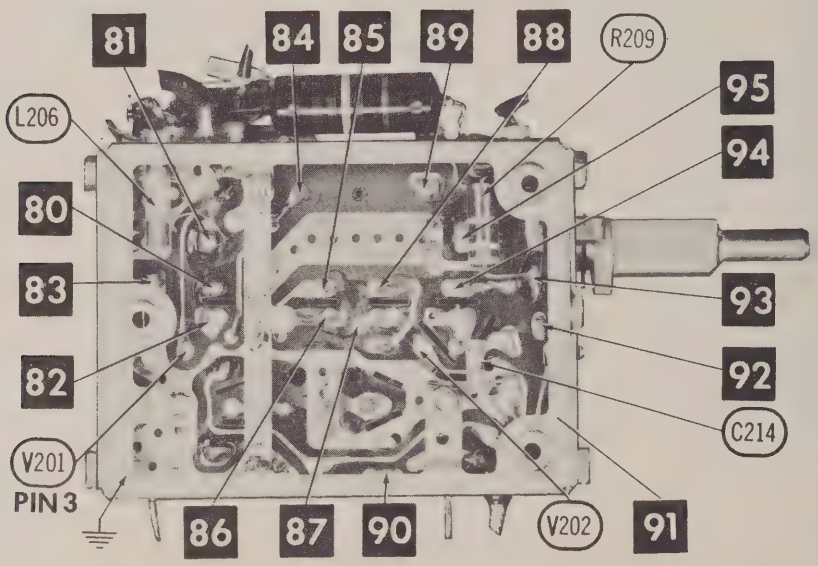
TUNER PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M201	Rear Plate Assy.	76-10897-4	Includes antenna matching transformer, L201A, IF Traps, L201B, L202, Antenna Blocking Networks, K201, K202, Antenna lead and strain relief
M202	Feed Thru Plate	76-10897-6	Includes C204, C207, C211, C221 & C224
	Wiper Spring	76-10896-6	Fine Tuning (Hair pin type) Rotor grounding
	Tuning Core	76-10896-2	Osc. Tuning, Brass, Channels 2, 4, 6, 13
	Tuning Core	76-10897-12	Iron, Channel 1
	Tuning Core	76-10896-3	Iron, Channel 6
	Printed Board	76-10897-2	Wiper Contacts, Tube Sockets and Fine Tuning Stator only
	Printed Board	76-10897-3	Includes all components

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		PHILCO PART No.	CBS PART No.	SYLVANIA PART No.	
M203	1N82A	34-8027	1N82A	1N82A	UHF Mixer (Clip-in)



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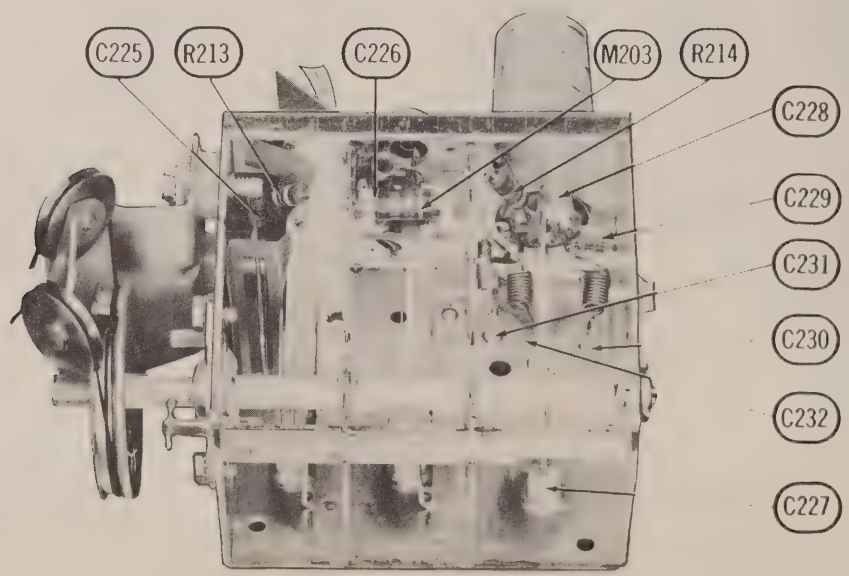
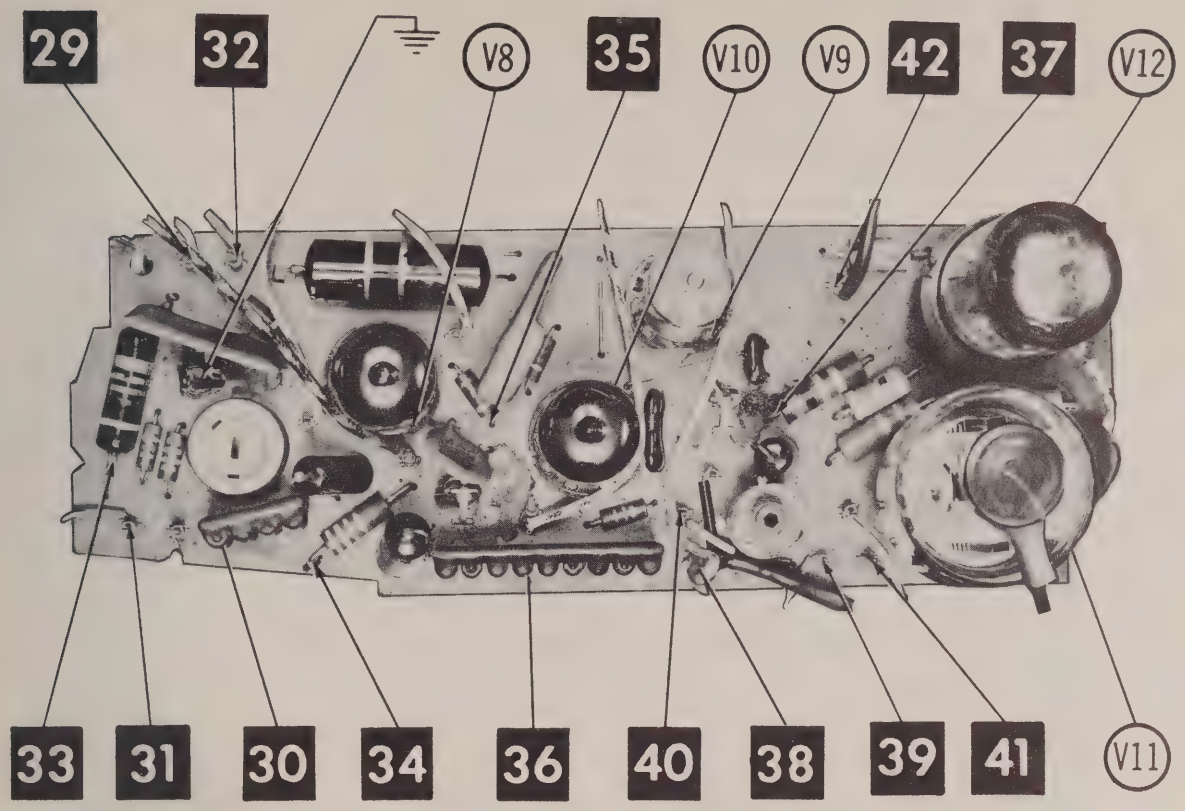
VHF TUNER 76-10529 (T-73)

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



UHF TUNER 76-10687 (T-28A)

CircuiTrace Numbers 29 thru 42



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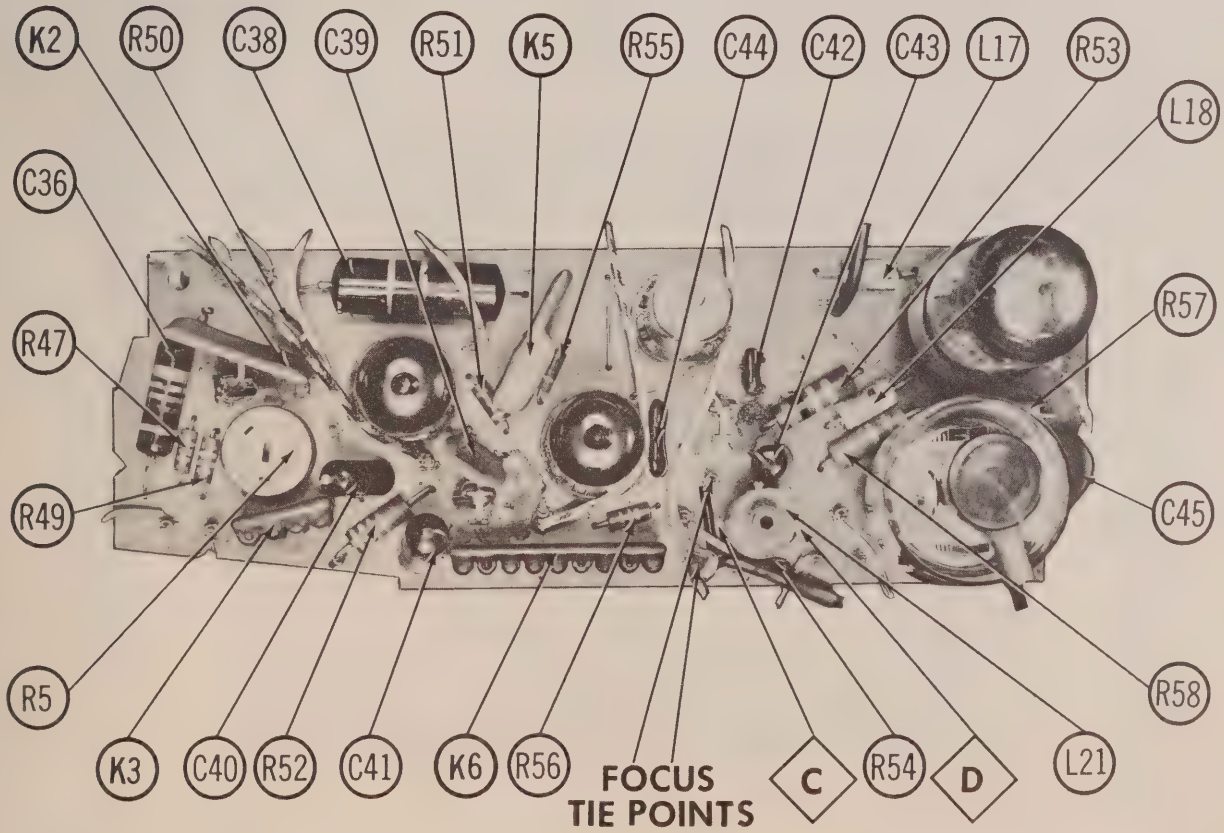
SWEEP PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



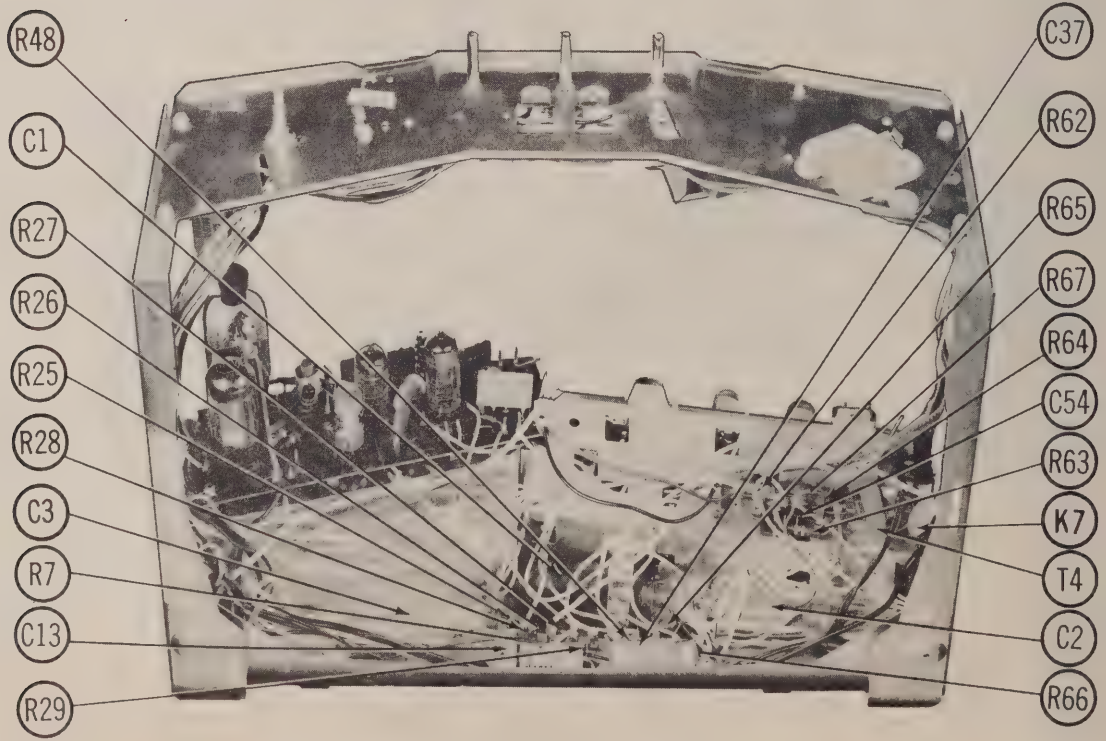
SWEEP PRINTED BOARD

RESISTANCE MEASUREMENTS

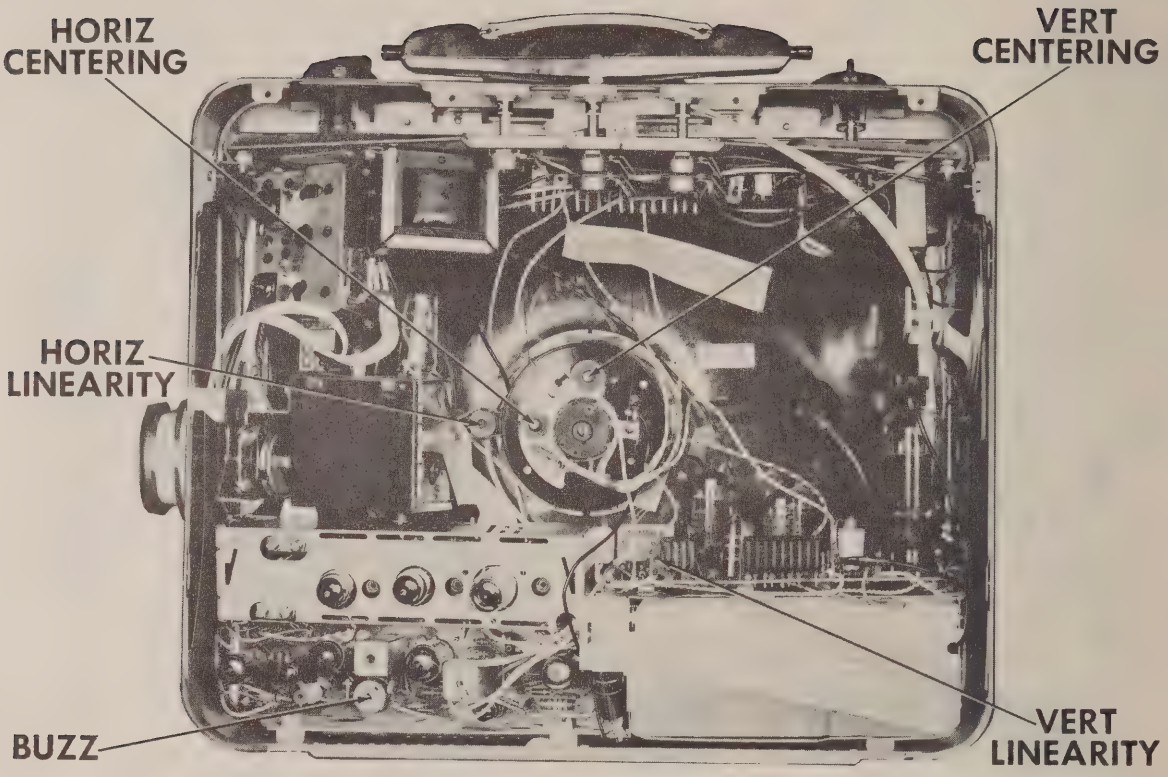
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4DE6	1.5meg	47Ω	20Ω	21Ω	▪ 660Ω	▪660Ω	0Ω		
V2	4DE6	1.5meg	68Ω	21Ω	22Ω	▪ 660Ω	▪ 660Ω	0Ω		
V3	6AM8A	220Ω	.1Ω	▪ 990Ω	22Ω	24Ω	▪ 990Ω	.1Ω	3300Ω	0Ω
V4	8AW8A	4000Ω	3.5meg	†24K	11Ω	14Ω	68Ω	680K	▪ 0Ω	†5700Ω
V5	12AZ7A	50K	1.1meg	0Ω	14Ω	14Ω	▪ 1000Ω	220K	0Ω	16Ω
V6	4CS6	2Ω	●30Ω	16Ω	17Ω	†420K	▪ 7500Ω	5Ω		
V7	12ED5	¶	500K	17Ω	20Ω	500K	†220Ω	†515Ω		
V8	13DE7	†425Ω	1.9meg	1.9meg	11Ω	7.5Ω	●†3.2meg	150K	●32K	●650Ω
V9	2EN5	TP	0Ω	6.5Ω	7.5Ω	150K	0Ω	830K		
V10	9AU7	†11K	2meg	1200Ω	5Ω	5Ω	†45K	● 110K	1200Ω	6.5Ω
V11	17DQ6A	NC	27Ω	NC	†22K	800K	NC	30Ω	0Ω	TOP CAP †13Ω
V12	17D4GT	NC	NC	¶250K	NC	†1Ω	NC	27Ω	24Ω	
V13	1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †383Ω
V14	17DAP4/ SF-17	5Ω	‡100K	1meg	†1500Ω	NC	‡100K	● 220K	4Ω	
V201	3CY5	1.5meg	0Ω	3Ω	2Ω	▪ 1000Ω	▪ 11K	0Ω		
V202	6BR8A	15K	▪ 3900Ω	0Ω	0Ω	2Ω	▪ 1800Ω	▪12K	0Ω	100K
V203	3AF4A	▪ *3900Ω	*5600Ω	4Ω	3Ω	0Ω	*5600Ω	▪ *3900Ω		
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▪ MEASURED FROM 140V SOURCE.
† MEASURED FROM 275V SOURCE.
‡ MEASURED FROM PIN 3 OF V12.
* MEASURED IN "UHF" POSITION.

NC NO CONNECTION
TP TIE POINT



CHASSIS – FRONT VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools:
B1 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

Turn the set on and tune in a TV station, preferably with a test pattern.

Connect a clip lead from point Ⓒ to point Ⓓ.

Set the Horizontal Hold to the center of its range.

Adjust the Horizontal Range control (R3B) to bring picture into sync from black bars sloping up to the left until picture floats back and forth on the screen.

Remove clip lead between point Ⓒ and point Ⓓ and adjust the Horizontal Frequency slug (B1) until picture synchronizes horizontally.

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 21T121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 21T121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

MODEL 17P110SU (CH. 1-537-5)

SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 21T121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PHOTOFACT* Folder with CIRCUITRACE*

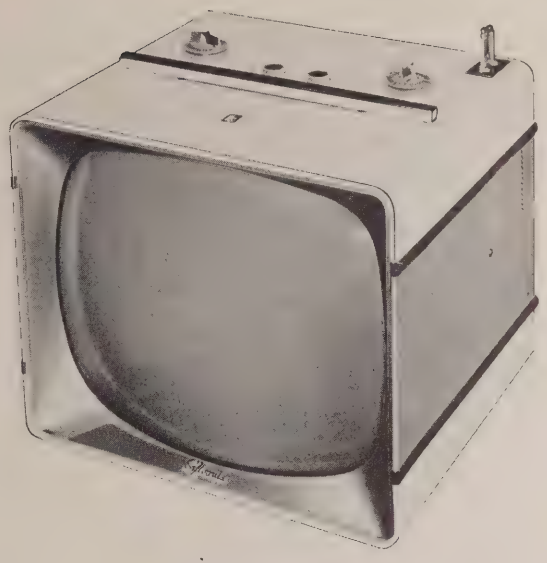
EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 21T121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove On-Off Brightness and VHF Selector knobs by pulling straight up. Remove "C" washer from Brightness dummy knob and lift to disengage. Disengage 3 remaining top knobs by pulling up. (These 4 knobs remain on cabinet.)
2. Remove 14 metal screws holding rear cover. Remove rear cover.
3. Remove picture tube socket and HV lead.
4. Remove 2 metal screws holding chassis rubber feet at the bottom.
5. Lift chassis up and to the rear to clear rubber feet from slots.
6. Remove chassis.
7. If necessary, remove yoke from picture tube and speaker leads.



MODEL 17P110SU (CH. 1-537-5)

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	Sylvania	MODELS	CHASSIS
		17P110Q, QU, S, SU, 17P206 Series	1-537-5, -6
		21T121 Series	1-539-3, -4
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products Inc., 700 Ellicott St., Batavia, N.Y.		
TYPE SET	Television Receiver		
TUBES	VHF - Sixteen, UHF - Seventeen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 190 Watts, 1.8 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF Oscillator it is necessary to remove the chassis from the cabinet. (See disassembly instructions.)

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube, and safety glass cleaning, it is necessary to remove the chassis. (See disassembly instructions.)

SPECIAL ADJUSTMENTS

A. AGC
Observe the picture and advance the AGC control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

B. Focus
The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 7, or 6 and 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency coil is used as the Horizontal Hold control. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (All) located on top of chassis.

FUSE

One fuse is used for low voltage power supply protection and a fuse wire for filament protection.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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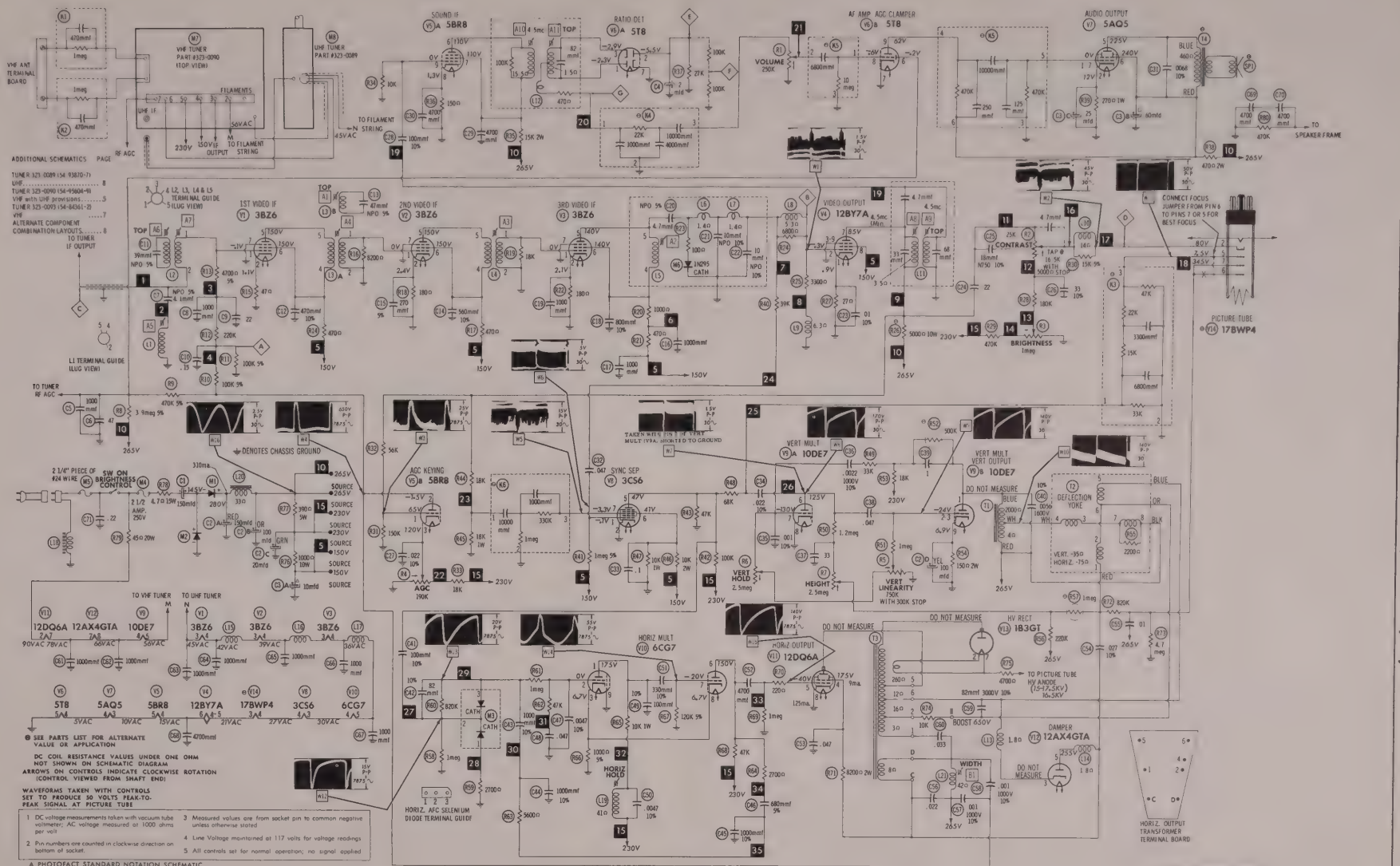
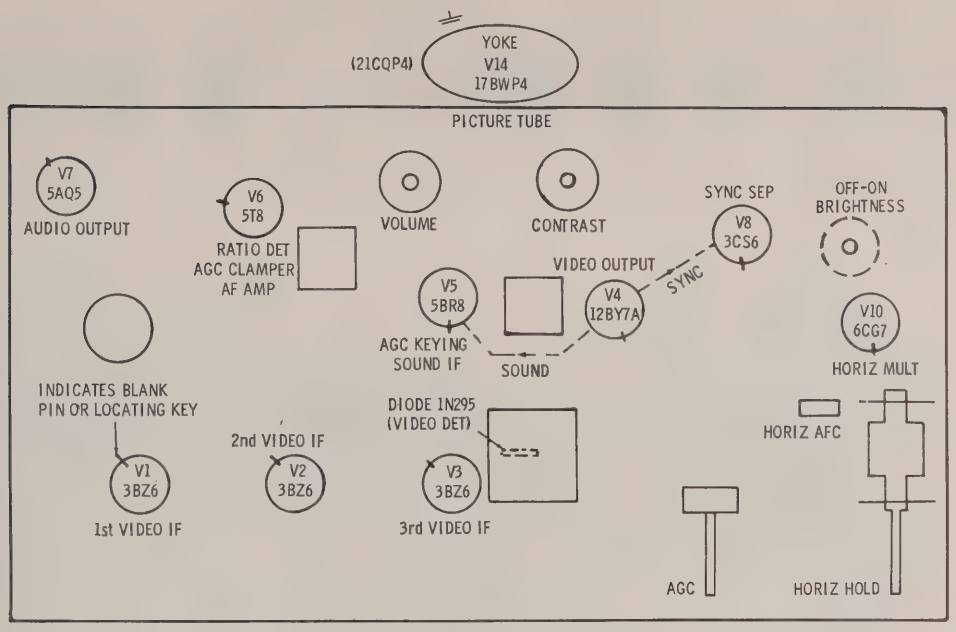
SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 21T121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 21T121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

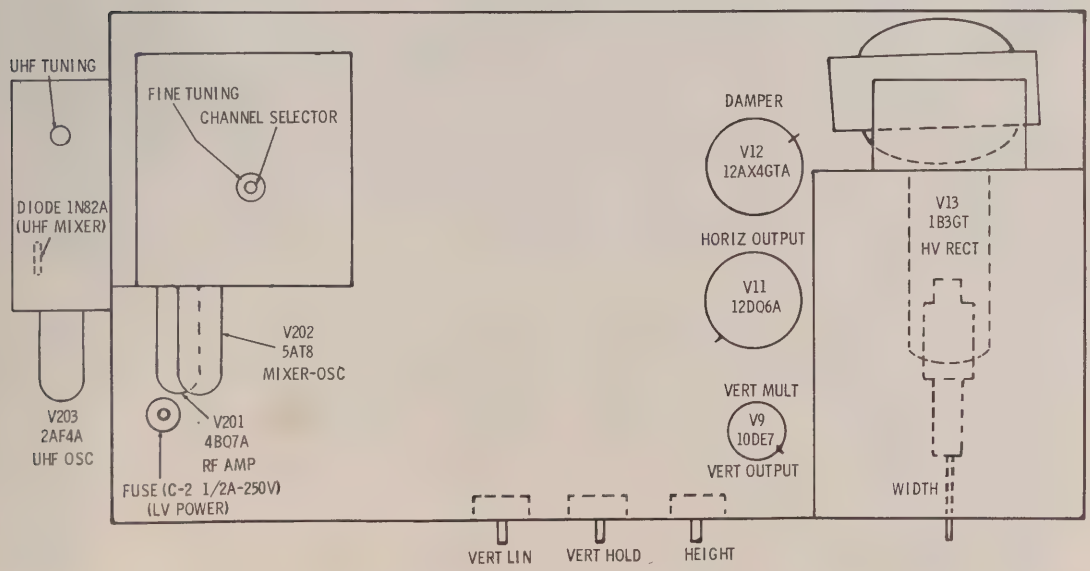
SET 434 FOLDER 2


VHF ANT TERMINAL BOARD
VHF TUNER PART #323-0090 (TOP VIEW)
UHF TUNER PART #323-0089
FILAMENTS
UHF I.F.
TO FILAMENT STRING
RF AGC
ADDITIONAL SCHEMATICS PAGE
TUNER 323-0089 (54-93870-7)
UHF 8
TUNER 323-0090 (54-93604-9)
VHF with UHF provisions 5
TUNER 323-0093 (54-8436-2)
VHF 7
ALTERNATE COMPONENT COMBINATION LAYOUTS 8
TO TUNER I.F. OUTPUT
L1 TERMINAL GUIDE (LUG VIEW)
L2, L3, L4 & L5 TERMINAL GUIDE (LUG VIEW)
TO TUNER RF AGC
SOUND I.F. 5BR8
RATIO DET 5T8
AF AMP AGC CLAMPER 5T8
AUDIO OUTPUT 5AQ5
VOLUME 250K
1ST VIDEO I.F. 3BZ6
2ND VIDEO I.F. 3BZ6
3RD VIDEO I.F. 3BZ6
VIDEO OUTPUT 12BY7A
CONTRAST
BRIGHTNESS
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 7 OR 5 FOR BEST FOCUS
PICTURE TUBE 17BWP4
TO SPEAKER FRAME
DENOTES CHASSIS GROUND
TAKEN WITH PIN 7 OF VERT MULT (V9A) SHORTED TO GROUND
AGC KEYING 5BR8
SYNC SEP 3CS6
VERT MULT 10DE7
VERT MULT OUTPUT 10DE7
DEFLECTION YOKE
VERT. -350 HORIZ. -750
VERT HOLD 2.5meg
HEIGHT 2.5meg
VERT LINEARITY 150 WITH 300K STOP
DO NOT MEASURE
HORIZ MULT 6CG7
HORIZ OUTPUT 12DQ6A
HV RECT 1B3GT
TO PICTURE TUBE HV ANODE (15-17.5KV) 16-5KV
BOOST 650V
DAMPER 12AX4GTA
WIDTH
HORIZ. OUTPUT TRANSFORMER TERMINAL BOARD
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
TO VHF TUNER
TO UHF TUNER
12DQ6A 12AX4GTA 10DE7 3BZ6 3BZ6 3BZ6 3BZ6
5T8 5AQ5 5BR8 12BY7A 17BWP4 3CS6 6CG7
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket.
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation; no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
© Howard W. Sams & Co., Inc. 1959
SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 21T121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

TUBE PLACEMENT CHART



TOP VIEW



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

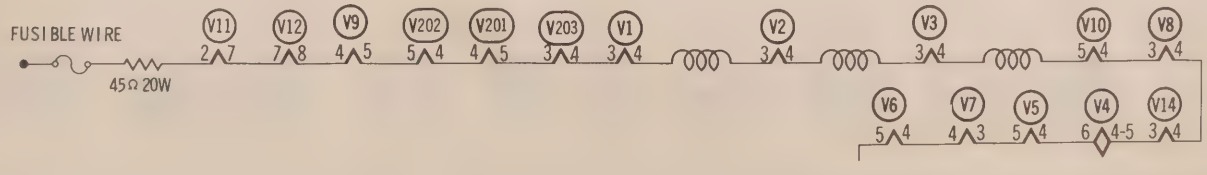
POWER SUPPLY FAILURE
No raster, no sound Fusible Wire (F11), Fuse (2½A), Rectifiers (B+)

SWEEP FAILURE
No raster, has sound Rectifier (Horiz. AFC), V10, V11, V12, V13, V14
No vertical deflection V9
Poor vert. linearity or foldover V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, Rectifiers (B+)
Vert. off freq. V9
Horiz. off freq. V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1, (V203, UHF Diode, UHF only)
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7
Overloaded picture V5, V6

SYNC FAILURE
No vert. sync V8
No horiz. sync V8, Rectifier (Horiz. AFC)
No vert. or horiz. sync V8

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 21T121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

FOLDER 2

SYLVANIA MODELS 17P1105, 5U, Q, QU, 17P206
Series, 211121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

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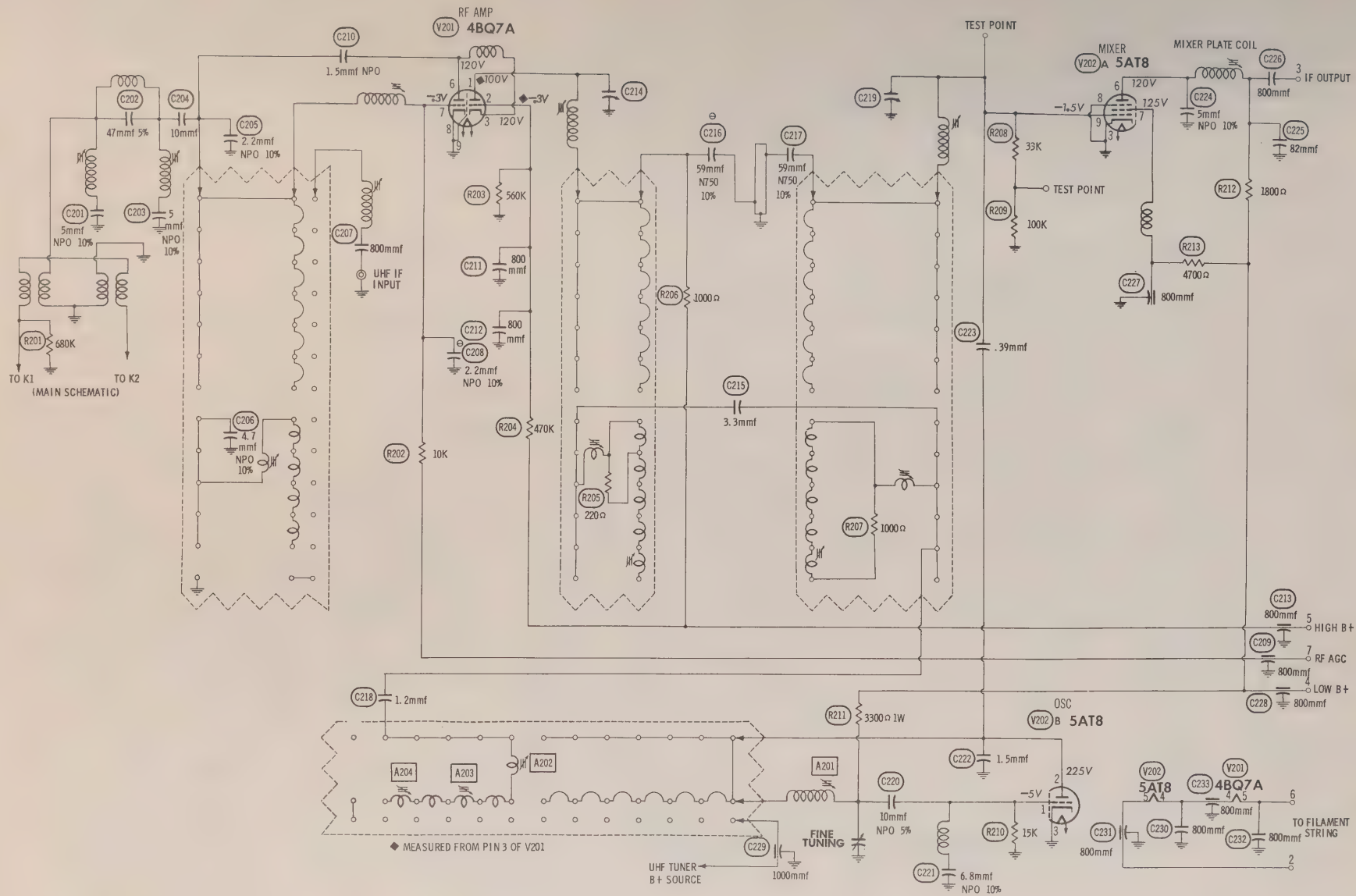
FOLDER 2



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER WITH UHF PROVISIONS 323-0090 (54-95604-9)

SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 211121 Series (Ch. 1-537-5, -6, 1-539-3, -4)

TUNER PARTS LIST AND DESCRIPTIONS

323-0090 (54-95604-9), 323-0089 (54-93870-7)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	4BQ7A	
V202	Mixer-Osc.	5AT8	

ITEM No.	USE	TYPE	NOTES
V203	UHF Osc.	2AF4A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C201	5			NPO-DI 5		C10V5C		5TCC-Q5S 10% *	NPO 10%
C202	47				DTZ-47		CNO-447	5GA-Q47S 5% *	5%
C203	5			NPO-DI 5		C10V5C		5TCC-Q5S 10% *	NPO 10%
C204	10			BPD-00001	DD-100	L10Q1	CNO-410	5GA-Q1	
C205	2.2				DTZ-2R2	C10V22C	CNO-522	5TCCB-V22	NPO 10%
C206	4.7			NPO-DI 4.7	DTZ-47	C10V47C	CNO-547	5TCCB-V47	NPO 10%
C207	800			BPD-0008	DD-801	L10T8		5GA-T8	
C208	2.2				DTZ-2R2	C10V22C	CNO-522	5TCCB-V22S10%*	NPO 10% ①
C209	800			EF-001	MFT-1000			503C-D1	
C210	1.5				DTZ-1R5	C10V15C	CNO-515	5TCCB-V15	NPO
C211	800			BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C212	800			BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C213	800			EF-001	MFT-1000			503C-D1	
C214									
C215	3.3			NPO-SI 3.3	DD-3R3	CTA6V33C	ZT-5533	5TCCB-V33	
C216	59							5TCU-Q59S 10%*	N750 10% ②
C217	59							5TCU-Q59S 10%*	N750 10% ②
C218	1.2							5TCCB-V12S*	
C219									
C220	10				DTZ-10		CNO-410	5TCC-Q1S 5% *	NPO 5%
C221	6.8			NPO-DI 6.8	DTZ-6R8	C10V68C	CNO-568	5TCCB-V68S10%*	NPO 10%
C222	1.5				TCZ-1R5	CTA6V15C	ZT-5515	5TCCB-V15	
C223	.39								
C224	5			NPO-DI 5		L10V5	ZT-555	5TCC-Q5S 10% *	NPO 10%
C225	82								N1500
C226	800			BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C227	800			EF-001	MFT-1000			503C-D1	
C228	800			EF-001	MFT-1000			503C-D1	
C229	1000			EF-001	MFT-1000			503C-D1	
C230	800			BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C231	800			EF-001	MFT-1000			503C-D1	
C232	800			BPD-0008	DD-801	L10T8	B-382	5GA-T8	
C233	800			EF-001	MFT-1000			503C-D1	
C234									
C235									
C236									
C237									
C238									

* Not normally in distributors stock. Available through distributor on order to manufacturer.
① Some versions may use 2.7mmf in this application.
② Some versions may use 120mmf in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SYLVANIA PART No.	NOTES
R201	680K			
R202	10K			
R203	560K			
R204	470K			
R205	220Ω			
R206	1000Ω			
R207	1000Ω			
R208	33K			

ITEM No.	RATING OHMS	RATING WATT	SYLVANIA PART No.	NOTES
R209	100K			
R210	15K			
R211	3300Ω	1		
R212	1800Ω			
R213	4700Ω			
R214	680K			
R215	6800Ω			
R216	1500Ω			

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: SYLVANIA PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M201	1N82A		1N82A	1N82A	UHF Mixer (Clip-in)

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER to PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Suggested alignment tools: General Cement #8607, 9291
Walsco #2520, 2522, 2523, 2524, 2537

VHF OSCILLATOR ALIGNMENT

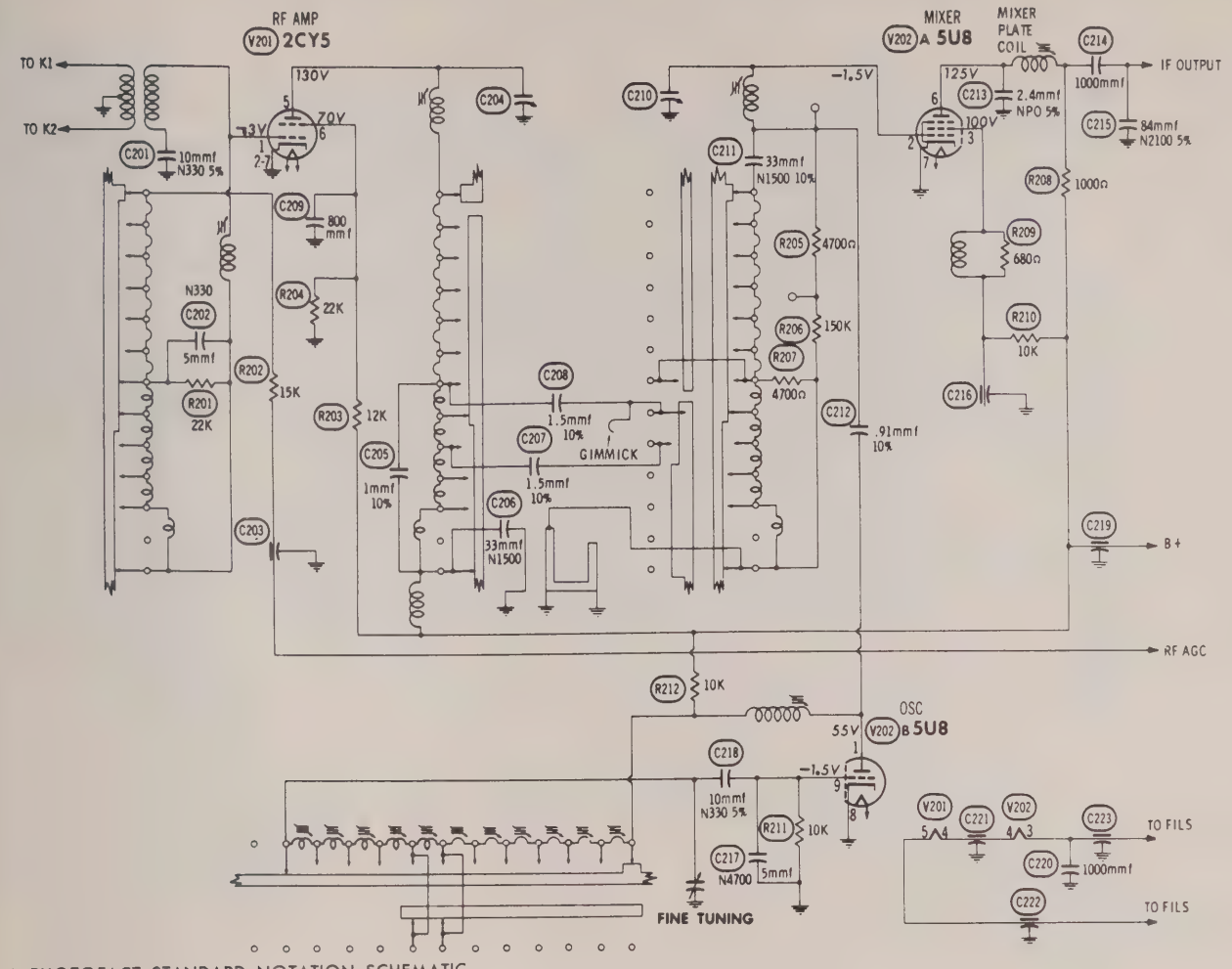
Set the Fine Tuning to the center of its range. Set the Channel Selector to the highest high band channel operating in the area. Adjust A201 for best picture and sound. Check all other high band channels operating in the area in a descending order and if necessary, adjust the coil for that channel by bending toward or away from the wafer for best picture and sound.
Set the Channel Selector to the highest low band channel operating in the area and adjust the appropriate slug for best picture and sound. A202 is the adjustment for both channel 6 and 5. However, the slug can only be reached when the selector is set to channel 6. Therefore, to adjust channel 5 switch to channel 6, adjust slug, then switch back to channel 5 and check picture. Repeat until adjustment is satisfactory. A203 is for adjusting channels 4 and 3 and is adjusted in the same manner switching to channel 4 to adjust channel 3. A204 is for adjusting channel 2.

VHF RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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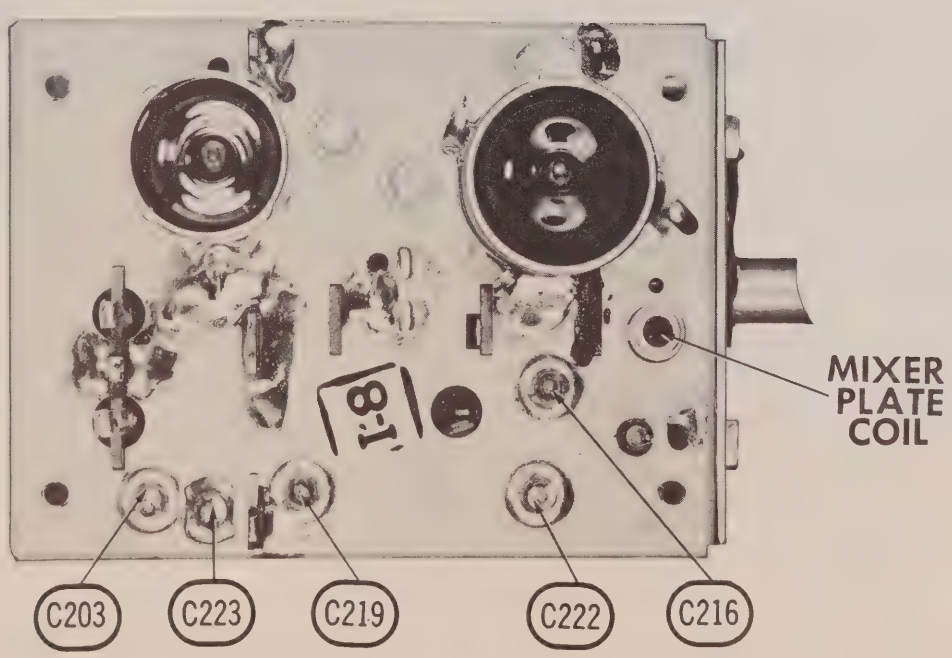
VHF TUNER 323-0093 (54-84361-2)



TUNER 323-0093 (54-84361-2) - TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

323-0093 (54-84361-2)

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	2CY5	

ITEM No.	USE	TYPE	NOTES
V202	Mixer- Osc.	5U8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	10								N330 5%
C202	5								N330
C203									
C204									
C205	1			NPO-SI 1	TCZ-1			5TCCB-V1	10%
C206	33								N1500
C207	1.5			NPO-SI 1.5	TCZ-1R5	CTA6V15C	ZT-5515	5TCCB-V15	10%
C208	1.5			NPO-SI 1.5	TCZ-1R5	CTA6V15C	ZT-5515	5TCCB-V15	10%
C209	800			BPD-0008	DD-801	L10T8		5GA-T8	
C210									
C211	33								N1500 10%
C212	.91								10%
C213	2.4								NPO 5%
C214	1000			BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C215	84								N2100 5%
C216									
C217	5								N4700
C218	10								N330 5%
C219									
C220	1000			BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C221									
C222									
C223									

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

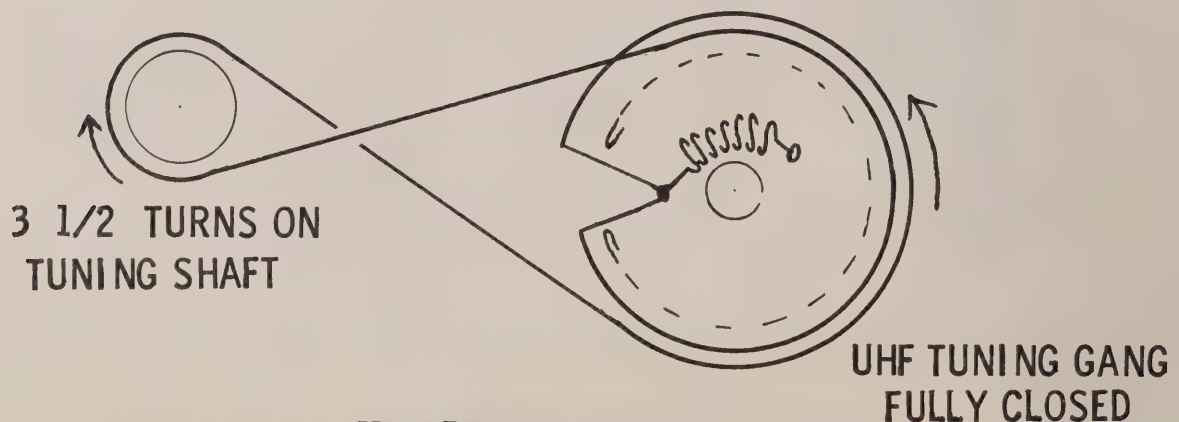
ITEM No.	RATING		SYLVANIA PART No.	NOTES
	OHMS	WATT		
R201	22K			
R202	15K			
R203	12K			
R204	22K			
R205	4700Ω			
R206	150K			

ITEM No.	RATING		SYLVANIA PART No.	NOTES
	OHMS	WATT		
R207	4700Ω			
R208	1000Ω			
R209	680Ω			
R210	10K			
R211	10K			
R212	10K			

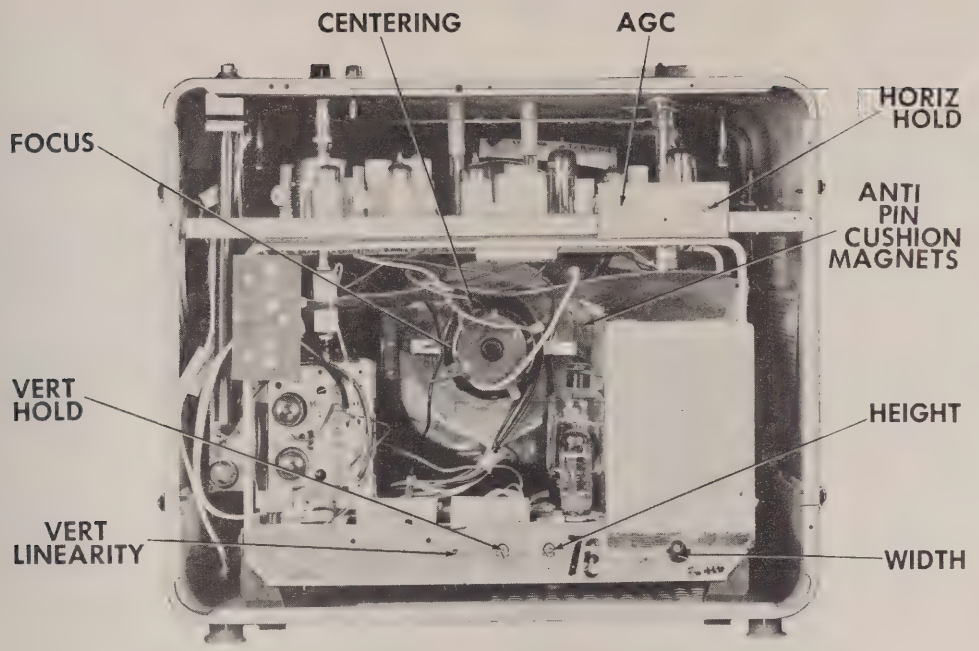
TUNER ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

Set the Fine Tuning at the center of its range. The adjustments (located in a circle around the shaft) should be made in sequence from the highest to the lowest channel in the area. Channel 13 adjustment is located at 7 o'clock, proceed in a counterclockwise direction for best picture and sound.



UHF DRIVE CORD



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station.

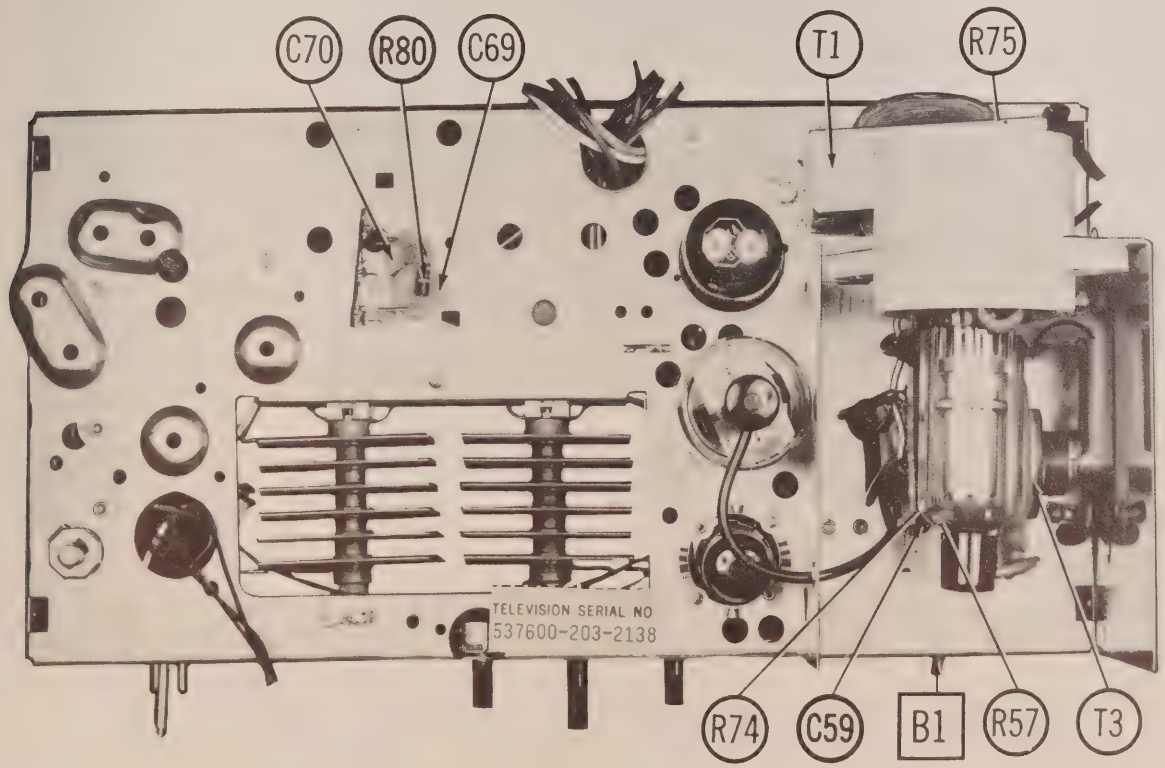
Turn Horizontal Hold in either direction until picture falls out of sync.

Turn Horizontal Hold slowly in opposite direction until picture just falls into sync.

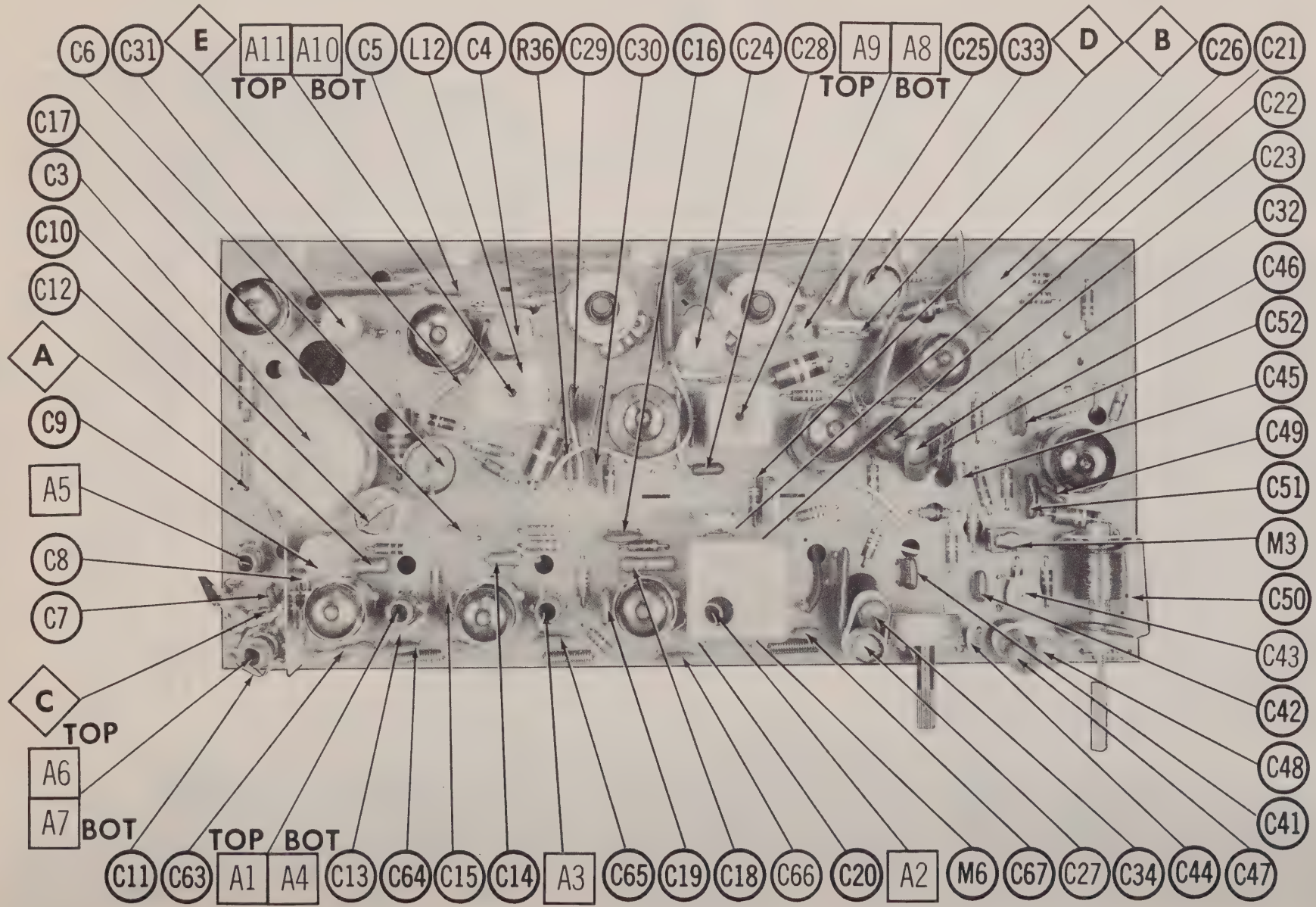
Switch to an unused channel and back again.

The picture should immediately fall into sync.

If not, SLIGHTLY adjust Horizontal Hold and repeat procedure until picture immediately falls into synchronization when switching channels. Adjust the Width slug (B1) for a picture slightly wider than necessary to fill the mask horizontally.



CHASSIS—TOP VIEW



PRINTED BOARD - CAPACITOR & ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER to PROTECT the Test Equipment.
Allow a 20 minute warm-up period for the receiver and test equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Suggested Alignment Tools: A1 thru A11 ... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 5 volt bias supply to point (A). Positive to chassis.
If a separate marker generator is used, loosely couple marker generator to sweep generator output. Use low marker output.
Keep all leads from generators and scope shielded and short as possible.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Preset Mixer Plate Coil to maximum counterclockwise position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.0047mfd	High side thru .0047mfd to point (C). Low side to chassis.	43.5MC (10MC Swp)	41.25MC 42.6MC 45.75MC	Any non-interfering channel	Vert. Amp. thru to point (B). Low side to chassis. (Across Video Det. load)	A1, A2, A3, A4	Adjust output of generator for response curve of 3 volt peak to peak on scope. Check for response similar to Fig. 1. Adjust A1 to place 41.25MC marker in trap notch, A3 to plac3 45.75MC marker, A4 to place 42.6MC marker and A2 for proper tilt. Retouch A3 and A4 until 45.75MC marker is at 60% and 42.6MC marker is at 80%.
2.	"	"	"	47.25MC	"	"	A5, A6	Adjust A5 and A6 for MINIMUM response of 47.25MC marker as in Fig. 2.
3.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	"	41.25MC 42.6MC 45.75MC 47.25MC	Any high band channel which causes MINIMUM distortion of response curve as Fine Tuning is rotated.	"	A7, & Mixer Plate Coil	Adjust A7 and Mixer Plate Coil for maximum gain and symmetry of response similar to Fig. 2. Repeat steps 1, 2 and 3.

4.5MC TRAP ALIGNMENT

Set Contrast control fully clockwise, and Brightness control fully counterclockwise.
Connect the negative lead of a 30 volt bias supply to point (A). Positive to chassis.
Connect a 4.5MC series tuned trap between point (D) and chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.0047mfd	High side thru .0047mfd to point (B). Low side to chassis. (Across Video Det. load)	4.5MC (Unmod)	Any non-interfering channel	RF probe across coil of 4.5MC series tuned circuit.	A8	Adjust for MINIMUM deflection.

ALTERNATE 4.5MC TRAP ALIGNMENT USING ON THE AIR SIGNAL

Turn set on and tune in a TV station. Adjust the Fine Tuning until sound bars can be seen in the picture. A fine grainy background will be noted in the picture. Adjust A8 until the grainy background is elininated or at a MINIMUM.
Readjust Fine Tuning for a normal picture.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM.

Connect two matched 100K (±1%) resistors in series from point (E) to chassis. The junction of these two resistors is alignment point (F) as shown on the schematic.
Connect bias as in 4.5MC Trap Alignment.
Set Contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.0047mfd	High side thru .0047mfd to point (B). Low side to chassis. (Across Video Det. load)	4.5MC (Unmod)	Any non-interfering channel	DC probe thru 100K to point (E). Common to chassis.	A9, A10	Adjust for maximum deflection.
6.	"	"	"	"	DC probe thru 100K to point (G). Common to point (F).	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 6 & 8

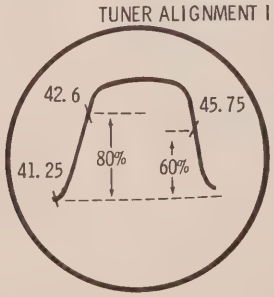


FIG.1

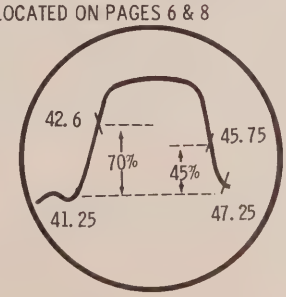


FIG.2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp.	3BZ6	
V2	2nd Video IF Amp.	3BZ6	
V3	3rd Video IF Amp.	3BZ6	
V4	Video Output	12BY7A	
V5	AGC Keying-Sound IF Amp	5U8	
V6	Ratio Det. - AGC Clamper-AF Amp.	6T8	

ITEM No	USE	TYPE	NOTES
V7	Audio Output	5AQ5	
V8	Sync Sep.	3CB6	
V9	Vert. Mult. -Vert. Output	10DE7	
V10	Horiz. Mult.	6CG7	
V11	Horiz. Output	12DN6A	
V12	Damper	12AX4GTA	
V13	HV Rect.	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	SYLVANIA PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V14	17BWP4		17BWP4 ①	17BWP4 ②	① "Silverama" ③
	21CQP4			21CQP4 ③	③ "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1	150	200	161-1025	PRI-100	XA0315	WD425		S-160	TVAS-1447 *
C2A	150	300	161-4024	PR4-260	D0025	WQ402			TVAS-4580 *
B	100	300			BBR100-25				
C	20	300							
D	100	25							
C3A	410	300	161-3029	AFH3-98-80		PFP326.4		Q-206	TVLS-3573.1*
B	460	300							
C	25	25							
C4	2	50	161-1041	PRS50V2	BBR2-50	TC302	TD-2-50	MT-0502	TVA-1301

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C6	.47	100		PR8BN-47	DF-503	CUB2P47	GEM-2047	2TM-P47	
C7	4.1								NPO 5%
C8	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C9	.22	100		PR8BN-22		CUB2P22	GEM-2022	2TM-P22	
C10	.15	200		PR8BN-15		CUB2P15	GEM-2015	2TM-P15	
C11	39								NPO 5%
C12	470			SI 470		DE-471		JL-347	5GA-T47S 10% * 10%
C13	47					DTZ-47		CNO-447	5TCC-Q47S 5% * NPO 5%
C14	560			SI 560		DE-561		JL-356	5GA-T56S 10% * 10%
C15	270					DTZ-270			5GA-T27S 5% 5%
C16	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C17	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C18	800			DI-800			JL-382	5GA-T8S 10% * 10%	
C19	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C20	4.7				DTZ-4R7		CNO-547	5TCCB-V47S 5% * NPO 5%	
C21	10			NPO-DI 10	DTZ-10	C10QIC	CNO-410	5TCC-Q1S 10% * NPO 10%	
C22	10			NPO-DI 10	DTZ-10	C10QIC	CNO-410	5TCC-Q1S 10% * NPO 10%	
C23	.01	200					GEM-211	2WF-S1	10%
C24	.22	400		PR8BN-22		BCSP22	ACE-6022	4SE-P22	
C25	18				TCZ-18	C10QI8U	CNT-418	5TCU-Q18S 10% *	NT50 10%
C26	.33	400					ACE-6022	4SE-P33S 10% *	10%
C27	.022	400						8BF-S22	10%
C28	100			DI-100	D6-101	5WST1	MC355	MS-31	10%
C29	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C30	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C31	.0068	600			D6-682		GEM-16368	6SE-D68S 10% *	10%
C32	.047	200		PR8BN-047	DF-503	CUB2S47	GEM-2147	2TM-S47	
C33	.1	400		PR8BN-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C34	.022	400						5BF-S22	10%
C35	.001	600					GEM-1621	6TM-DIS 10% *	10%
C36	.0022	1000	169-0062				GEM-1822	10TM-D22	10%
C37	.33	400		PR8BN-33		CUB4P33	GEM-4033	4TM-P33	
C38	.047	400		PR8BN-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C39	.1	400		PR8BN-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C40	.0056	1800	169-0068				GEM-16256	MS-D56S 10% *	10%
C41	100			1469-0001	DTZ-100	L10T1	CNO-310	MS-31	10%
C42	82			DI-82	DTZ-82	L10T82	CNO-482	MS-482	10%
C43	1000			DI-1000		L10DI	JL-210	5GA-DIS 10% *	10%
C44	1000			DI-1000		L10DI	JL-210	5GA-DIS 10% *	10%
C45	1000			DI-1000		L10DI	JL-210	5GA-DIS 10% *	10%
C46	680			1469-00068				MS-368	5%
C47	.0047	200					GEM-16247	2WF-D47	10%
C48	.047	200		PR8BN-047	DF-503	CUB2S47	GEM-2147	2TM-S47	
C49	100			1469-0001	DD-101	22R5T1	MC-235	MS-31	10%
C50	.0047	400	169-0046				GEM-16247	5BF-D47	10%
C51	330			1469-00033		22R5T33		MS-333	10%
C52	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C53	.047	400		PR8BN-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C54	.027	600						6TM-S27S 10% *	10%
C55	.01	600			DD-103	CUB6SI	GEM-611	6TM-SI	
C56	.022	200		PR8BN-022	DD-203	CUB2S22	GEM-2122	2TM-S22	
C57	.001	1000	169-0070				GEM-1621	10TM-DIS 10% *	10%
C58	.001	1000	169-0070				GEM-1621	10TM-DIS 10% *	10%
C59	82	3000	169-0061				3DY-482	30GA-Q82S 10% *	10%
C60	.033	600		PR8BN-033	DF-303	CUB6S33	GEM-6133	6TM-S33	
C61	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C62	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C63	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C64	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C65	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C66	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C67	1000			BPD-001	DD-102	BYA10DIM	B-210	5HK-DI	
C68	4700			BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C69	4700		167-0057	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C70	4700		167-0057	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C71	.22	400		PR8BN-22		CUB4P22	GEM-4022	4TM-P22	

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No.	MALLORY PART No.	
R1	250K	½	153-0135					Volume
R2	25K	½	153-0160					Contrast, Tap ④ 16.5K with stop ② 5000Ω
R3A	1meg	½	152-0053	B-69	A47-1meg-S	Q11-157	U54	Brightness
B	Shaft			Not Req.	KB8-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWZ-12	76-1	U8-26	
R4	190K	½	153-0138					AGC
R5A	750K	½	153-0137	AB-86 †	B47-1meg-S†	Bil-136 †	PTA754L †	Vert. Lin. with 300K stop
B	Shaft			AK-19	Not Req.	TM2	Not Req.	
R6A	2.5meg	½	153-0139	AB-83	B47-2.5meg -S	Bil-239		Vert. Hold
B	Shaft			AK-19	Not Req.	TM3		
R7A	2.5meg	½	153-0126	AB-83	B47-2.5meg -S	Bil-239		Height
B	Shaft			AK-19	Not Req.	TM2		

* Use KB with CRL "blue label" controls and KR with "red label" controls.
† Use 250K resistor in series with right hand terminal.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SYLVANIA PART No	NOTES
	OHMS	WATT		
R8	3.9meg 5%			
R9	470K 5%			
R10	100K 5%			
R11	100K 5%			
R12	220K			
R13	4700Ω 5%			
R14	470Ω			
R15	47Ω			
R16	8200Ω			
R17	470Ω			
R18	180Ω			
R19	18K			
R20	1000Ω			
R21	470Ω			
R22	180Ω			
R23	100Ω			
R24	6800Ω			
R25	3300Ω			
R26	5000Ω	10		Note 1
R27	27Ω			
R28	180K			
R29	470K			
R30	15K 5%			
R31	150K			
R32	56K			
R33	18K			
R34	10K			
R35	15K	2		
R36	150Ω			
R37	27K			
R38	470Ω	2		
R39	270Ω	1		
R40	39K			
R41	1meg 5%			
R42	100K			
R43	47K			
R44	18K			

ITEM No.	RATING		SYLVANIA PART No	NOTES
	OHMS	WATT		
R45	18K			
R46	10K	2		
R47	10K	1		
R48	68K			
R49	33K			
R50	1.2meg			
R51	1meg			
R52	500K		189-0081	Note 2
R53	18K			
R54	150Ω	2		
R55	2200Ω			
R56	220K			
R57	1meg		189-0082	Note 2
R58	1meg			
R59	2700Ω			
R60	820K			
R61	1meg			
R62	47K			
R63	5600Ω			
R64	2700Ω			
R65	10K	1		
R66	1000Ω 5%			
R67	180K 5%			
R68	47K			
R69	1meg			
R70	2200Ω			
R71	8200Ω	2		
R72	620K			
R73	4.7meg			
R74	10K			
R75	4700Ω			
R76	1000Ω	10	187-0026	
R77	390Ω	5	187-0018	
R78	4.7Ω	15	187-0034	
R79	45Ω	20	187-0052	
R80	470K			

Note 1. Some versions may use 6000Ω 7W in this application (Part #189-0087).
Note 2. Temperature Compensating resistor.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SYLVANIA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No	
L1	47.25MC Trap	118-0035					
L2A	1st Video IF	120-0024					
B	47.25MC Trap						
L3A	2nd Video IF	119-0023					
B	41.25MC Trap						
L4	3rd Video IF	119-0021					
L5	4th Video IF	119-0022					
L6	RF Choke	118-0020	19-2864	BC-566	4612		10.8 Microhenries
L7	RF Choke	118-0020	19-2864	BC-566	4612		10.8 Microhenries
L8	Series Peaking Coil	131-3036	19-3075		6172	VP-2	71 Microhenries
L9	Shunt Peaking Coil	131-3035	19-3100	TV-194	6112	VP-3	100 Microhenries
L10	Series Peaking Coil	131-3037	19-3375	TV-201	6134	VP-7	380 Microhenries
L11	Sound IF	120-0023					
L12	Ratio Detector	128-0015					
L13	RF Choke	118-0010	19-2864	BC-566	4612		10.8 Microhenries
L14	RF Choke	118-0010	19-2864	BC-566	4612		10.8 Microhenries
L15	Fil. Choke	118-0032	19-1000	BC-561	4602		1.2 Microhenries
L16	Fil. Choke	118-0032	19-1000	BC-561	4602		1.2 Microhenries
L17	Fil. Choke	118-0032	19-1000	BC-561	4602		1.2 Microhenries
L18	Line Choke	145-0027					119 Microhenries

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L19	41Ω		132-0019						Horiz. Freq.

FILTER CHOKE

ITEM No	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES	INDUCTANCE (0 CURRENT 1000 ~(~)	SYLVANIA PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No.	Thordarson PART No.	Triad PART No.
L20	.310A	33Ω	1.1 Hy.	145-0020					20C44	C-23X

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No	Triad PART No
L21	Width (12-50MH)	132-0011		MWC-3	6319				WC-19	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							
		SYLVANIA PART No.	Halldorson PART No	Merit PART No	Ram PART No	Rogers PART No.	Stancor PART No	Thordarson PART No	Triad PART No
T1	Vert. Output	241-0045	Z1900 ①	A-8146 ②				26S75 ①	A-116X
T2	Yoke-Horiz (30 5MH) (110°)-Vert (32 5MH)	100-0032		MDF-110 ③				Y-46 ③	Y-66
	Rear Cover & Centering Device	400-0034							
	Yoke Clamp	487-0076							
T3	Horiz. Output	241-0046		HVO-126 *				FLY-148 *	D-159

① Connect as autoformer. Use 8:1 turns ratio.
② Drill new mounting hole(s).
③ Use original rear cover and center device. Use original yoke damping network, if necessary.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	5		5				5	
	6		6				6	
	2		2				2	
	1		1				1	
	D		D				D	
	C		C				C	
Connect Width Coil Across	D & C		D & C				D & C	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SYLVANIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	5000Ω	3-4Ω	①		A-3026			34S48	S-6X	① Used in Ch. 1-537-5, 6. (Part of SPK-1)
	5000Ω	3-4Ω	143-0061 ②	Z1001 ③	A-2930 ③		A-3877 ②	34S51 ③	S-6X ②	② Used in Ch. 1-539-3, 4.
										③ Use original channel frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	539-0422 ①	4A1	① Includes T4 Used in Models 17P110S, SU, Q, QU, 17P206
	4"	PM		539-0424 ②		② Used in Model 21T121

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA	
K1	Antenna Input	470mmf, 1meg	190-0035	Centralab	RC-471
				Sprague	AC1-1
K2	Antenna Input	470mmf, 1meg	190-0035	Centralab	RC-471
				Sprague	AC1-1
K3	Vert. Retrace	3300mmf, 6800mmf, 15K, 22K, 33K, 47K	190-0037	(32-85945-2) ①	
K4	De-Emphasis	1000mmf, 4000mmf, 10000mmf, 22K	190-0034	(33-85954-1) ②	
				Centralab	PC-334
				Sprague	V-17
K5	Audio Coupling	125mmf, 250mmf, 6800mmf, 10000mmf, 470K, 470K, 10meg		(32-85947-1) ③	
K6	Sync Coupling	1000mmf, 10000mmf, 330K, 1meg	190-0043	(33-85098-2) ④	

① Some versions may use item #32-91411-1 with same part number.
② Some versions may use item #32-91108-1 with same part number.
③ Some versions may use item #32-85947-2 or 32-91109-2 (Part #190-0039)
④ Some versions may use item #32-91133-2 with same part number.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	SYLVANIA PART No	FEDERAL PART No	GENERAL ELECTRIC PART No	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.310A	517-0010 ③	124LAH ①	1N1008 ③	T400 ①	400A 1 ④	① Selenium Type.
			HA504 ②		TV500 ②	40K 2 ④	② Silicon Type
M2	.310A	517-0010 1	124LAH 1	1N1008 ③	T400 1	400A 1 ④	③ Germanium Type.
			HA504 ②		TV500 ②	40K 2 ④	④ Change value of R78 to 7.5Ω
M3		634-0008 ①	RM8S ①		SD-81 ②③		⑤ 2 used.

SYLVANIA MODELS 17P110S, SU, Q, QU, 17P206 Series, 21T121 Series (Ch. 1-537-5, -6; 1-539-3, -4)

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SYLVANIA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M4	C	2½A 250V	191-0022	562-0011	33202.5 (C-2½A-250V)	346006	C 2½	HC 1 3/4 to 2 1/2
M5	2 1/4" Length of #24 Wire							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SYLVANIA PART No.	CBS PART No.	SYLVANIA PART No.	
M6	1N295	1N295	1N60	1N295	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M7	Tuner	323-0090	VHF, with UHF Provisions, #54-95604-9
	Tuner	323-0093	VHF, #54-84361-2
	Tuner	323-0093	VHF, #54-84380-2
M8	Tuner	323-0089	UHF, #54-93870-7

CABINETS & CABINET PARTS

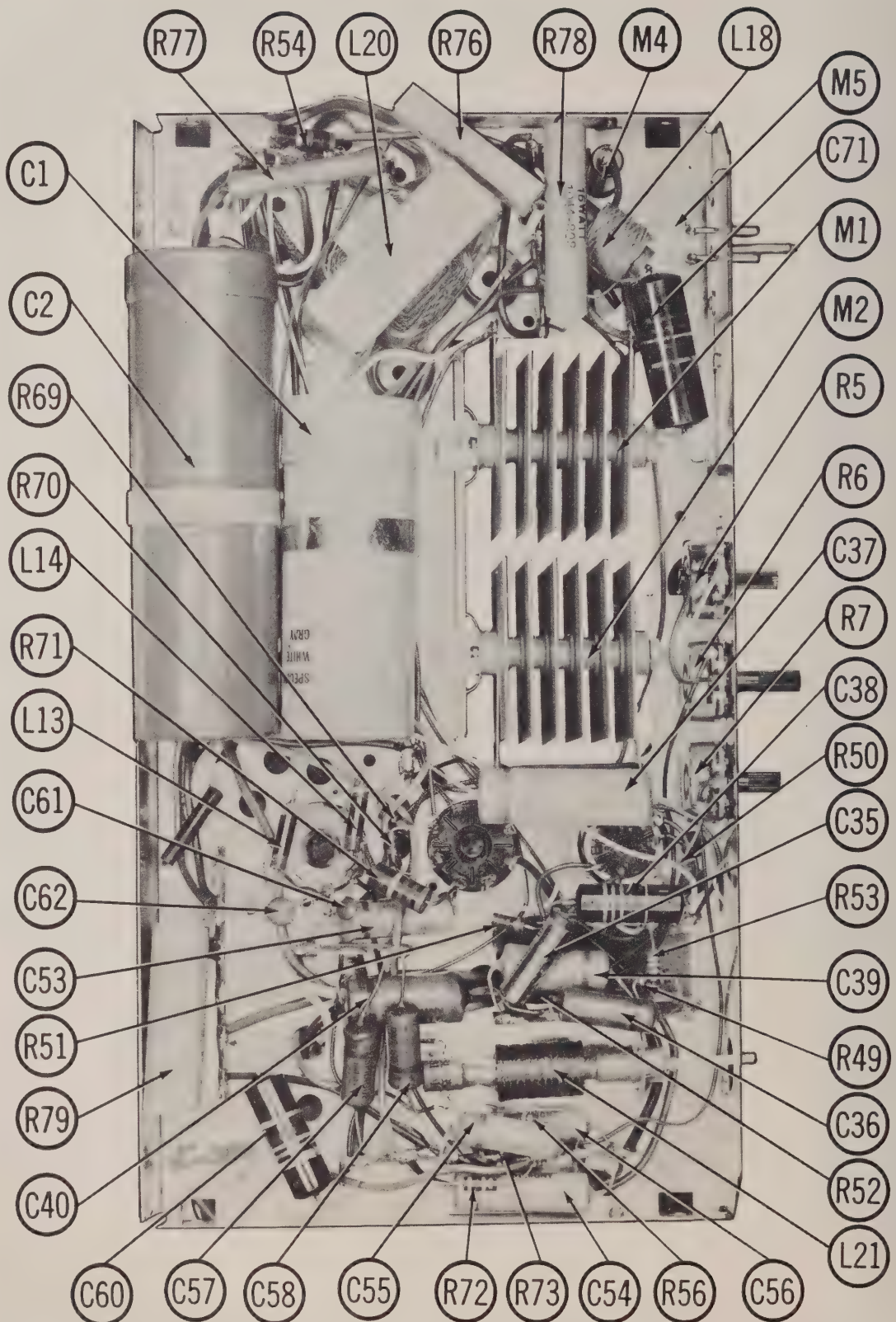
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	715-0030	Includes Mask, 17" Models
Safety Glass	715-2025	Model 21T121
Mask	716-0046	Model 21T121
Knob	743-0071	VHF Channel Selector, Model 17P110SU
Knob	743-0072	VHF Channel Selector, Model 17P110S
Knob	743-0074	VHF Channel Selector, Model 17P110Q
Knob	743-0073	VHF Channel Selector, Model 17P110QU
Knob	743-0083	VHF Channel Selector, Model 17P206,(VHF Models)
Knob	743-0082	VHF Channel Selector, Model 17P206, (VHF-UHF Models)
Knob	743-0070	VHF Channel Selector, Model 21T121, (VHF Models)
Knob	743-0075	VHF Channel Selector, Model 21T121, (VHF-UHF Models)
Knob	740-0200	Fine Tuning (Also order Retainer #544-0084), VHF-UHF Models
Knob	740-0199	Fine Tuning (Also order Retainer #544-0084), VHF Models
Knob	740-0194	UHF Fine Tuning, Models 17P110SU, QU, 21T121
Knob	740-0228	UHF Fine Tuning, Model 17P206
Knob	740-0201	Volume, Contrast (Also order Retainer #490-0013), Models 17P110S, SU
Knob	740-0203	Volume, Contrast (Also order Retainer #490-0013), Models 17P110Q, QU
Knob	740-0166	Volume, Contrast (Also order Retainer #490-0013), Models 17P206, 21T121
Knob	744-0058	Brightness-On-Off, Includes Spring, Models 17P110S, SU
Knob	744-0059	Brightness-On-Off, Includes Spring, Models 17P110Q, QU
Knob	740-0227	Brightness-On-Off, Includes Spring, Model 17P206
Knob	744-0060	Brightness-On-Off, Includes Spring, Model 21T121
Knob	748-0009	Dummy (Also order Retainer #490-0009)
Handle	818-0143	

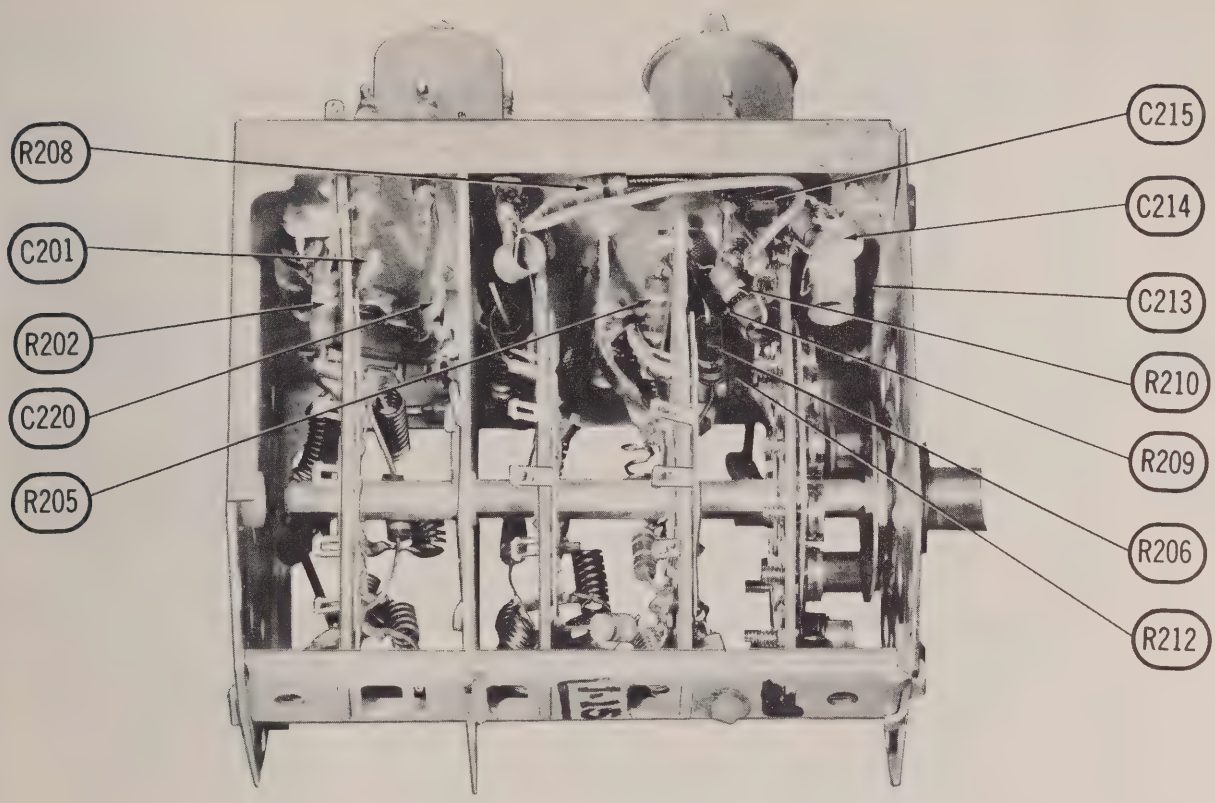
WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor

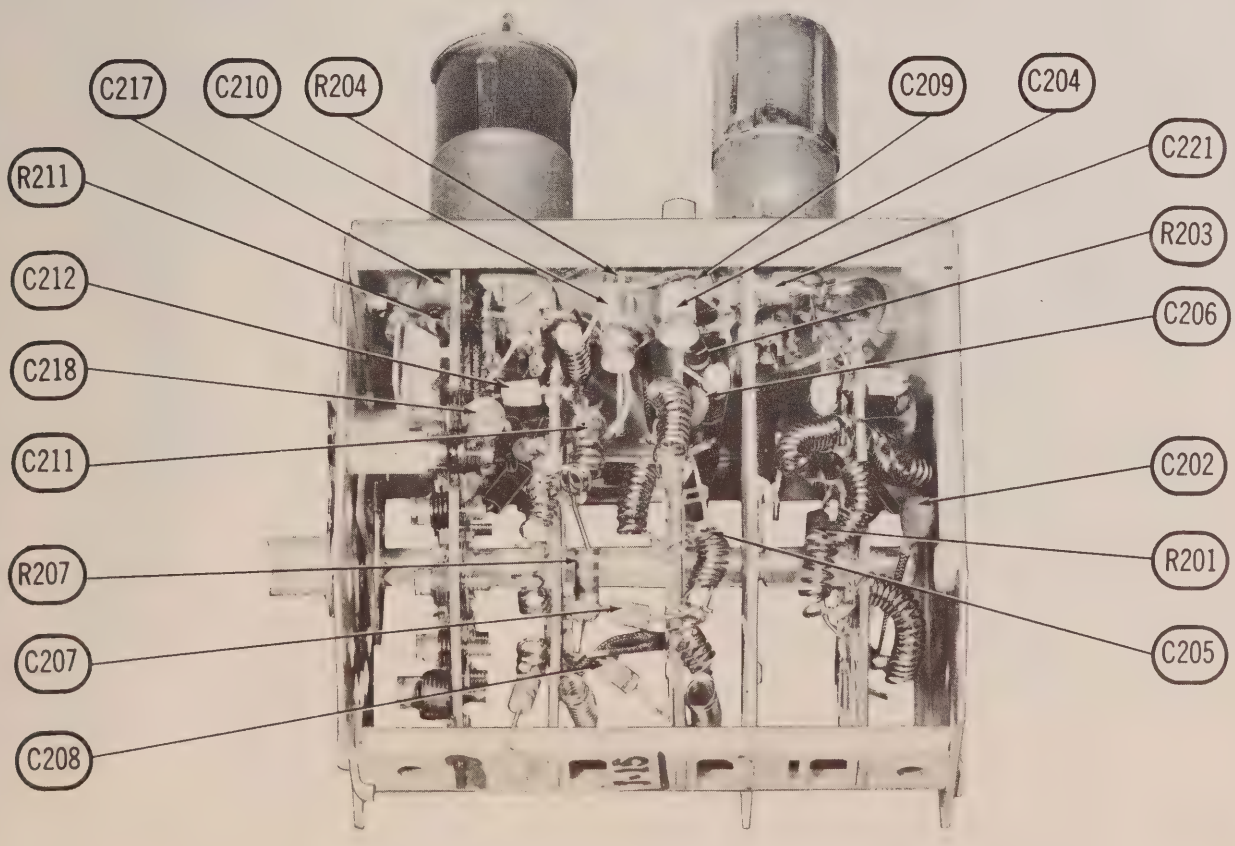
PRINTED BOARD – RESISTOR INDUCTOR IDENTIFICATION



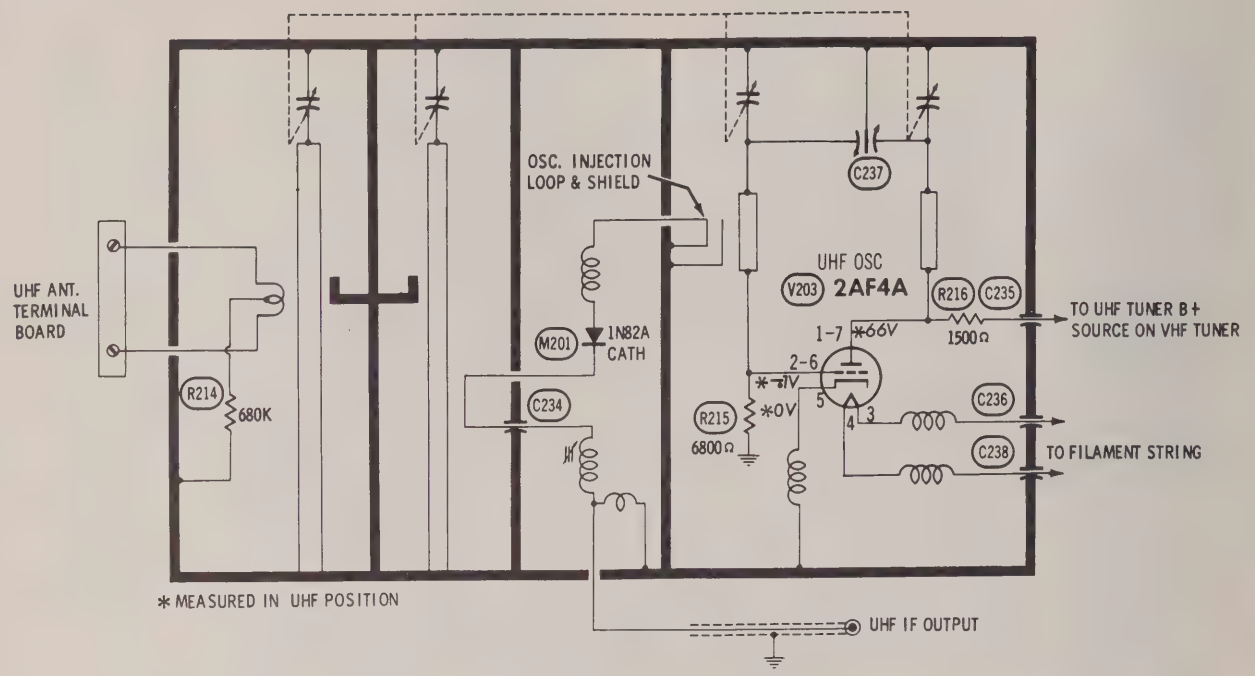
CHASSIS BOTTOM VIEW



VHF TUNER 323-0093 (54-84361-2) LEFT SIDE



VHF TUNER 323-0093 (54-84361-2) RIGHT SIDE



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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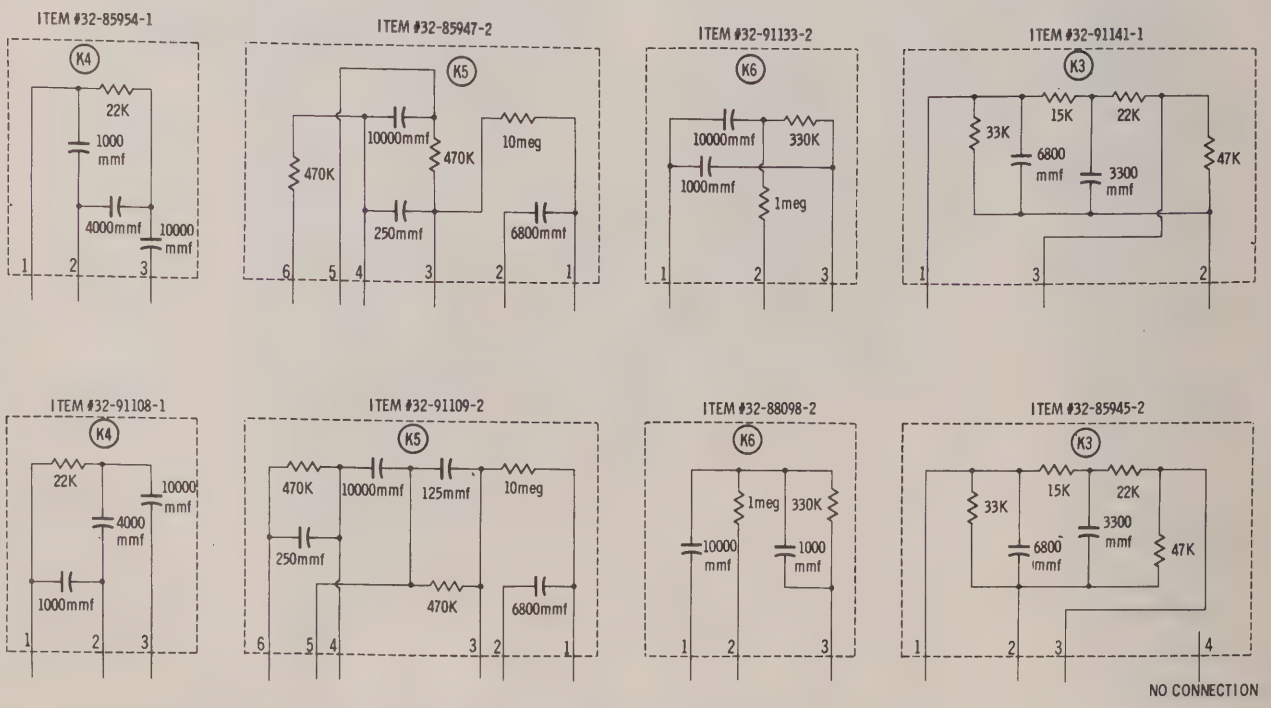
UHF TUNER 323-0089 (54-93870-7)



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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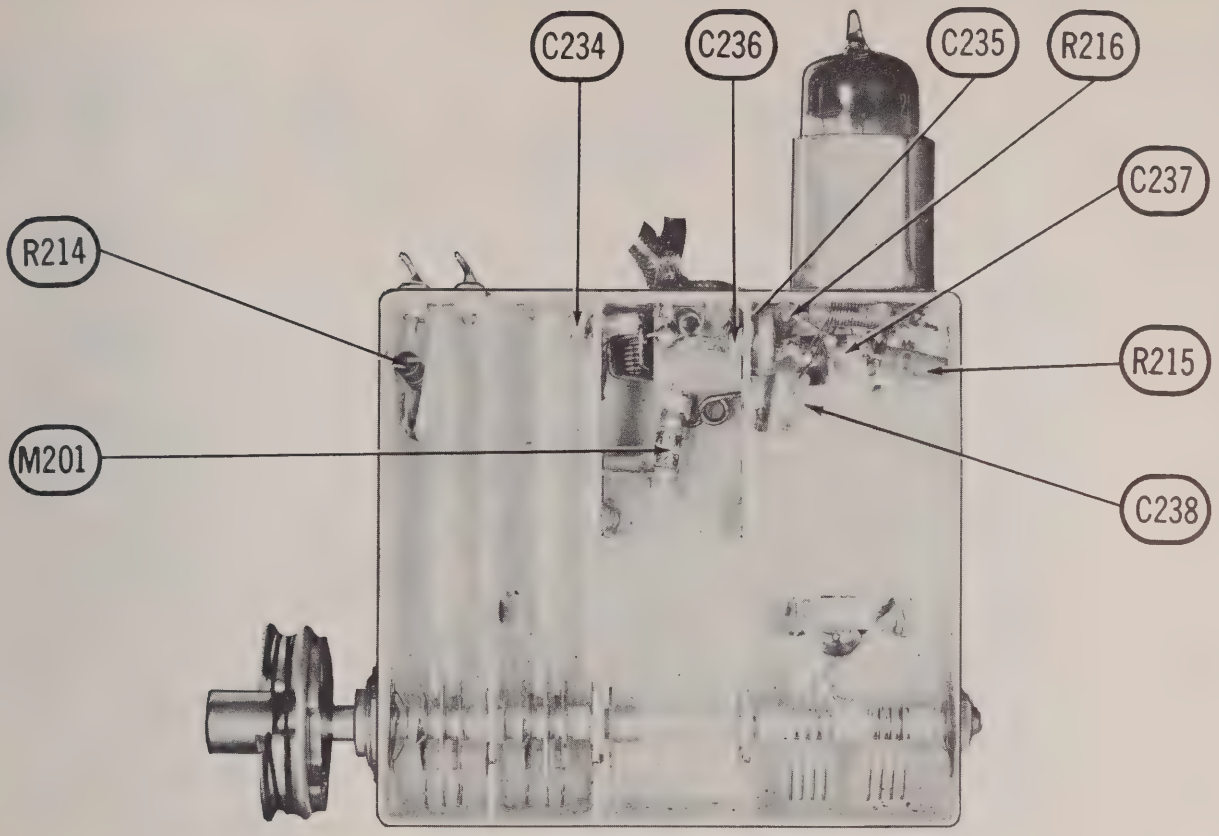
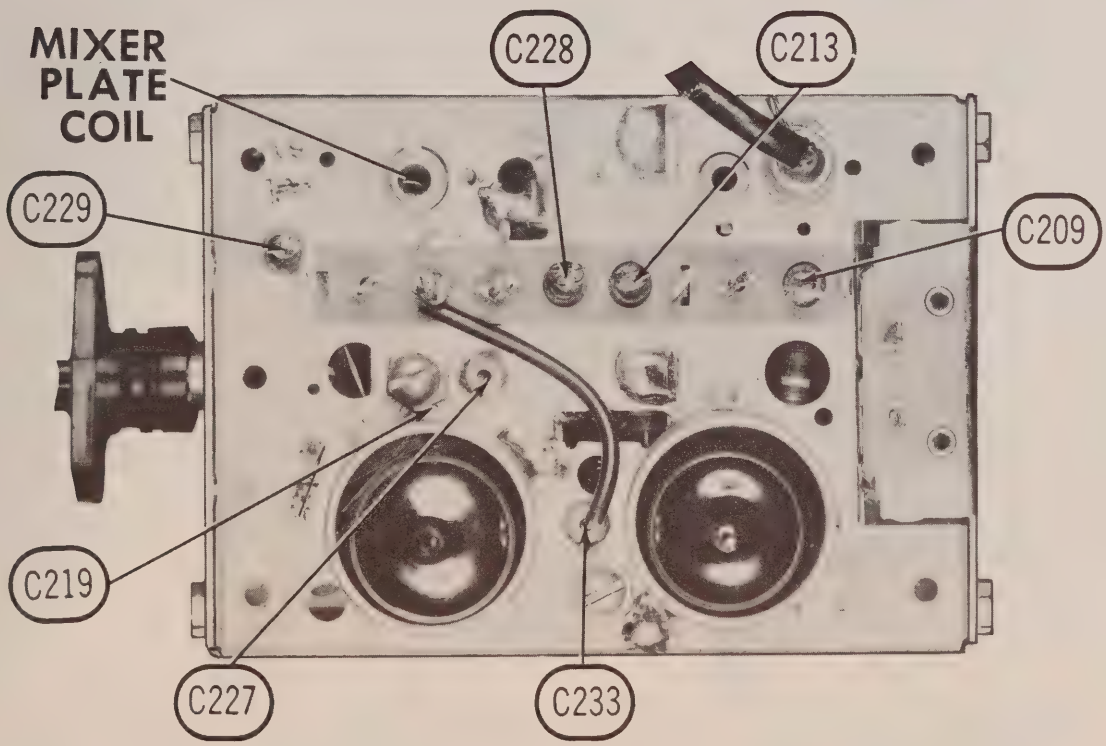
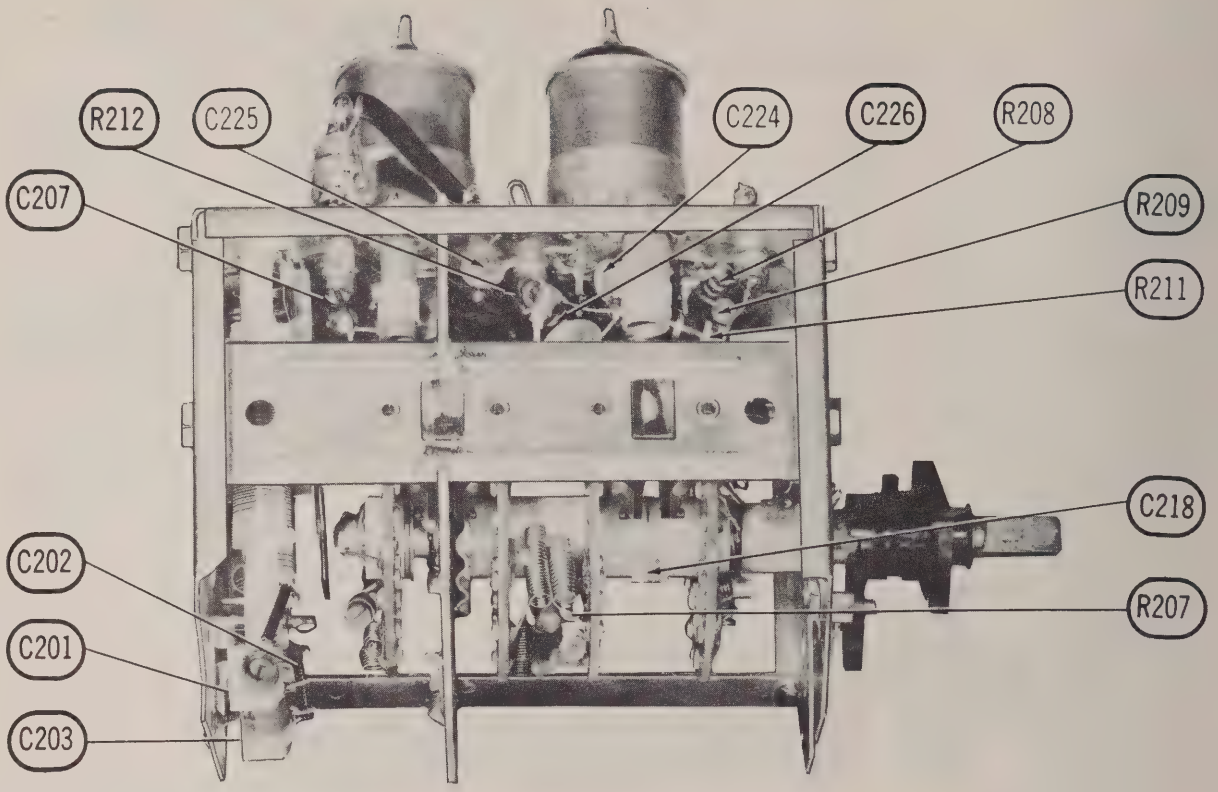
ALTERNATE COMPONENT COMBINATION LAYOUT



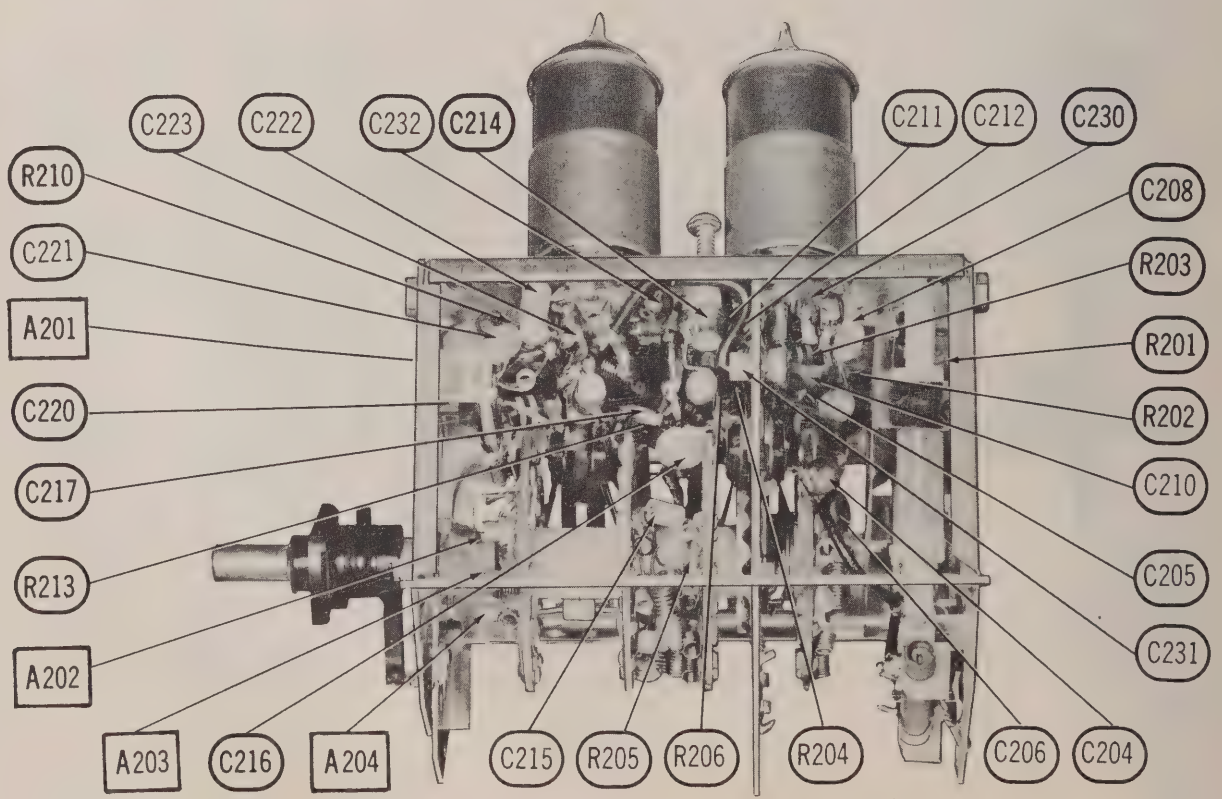
UHF TUNER 323-0089 (54-93870-7)



TUNER 323-0090 (54-95604-9) - TOP VIEW



TUNER 323-0090 (54-95604-9) - LEFT SIDE



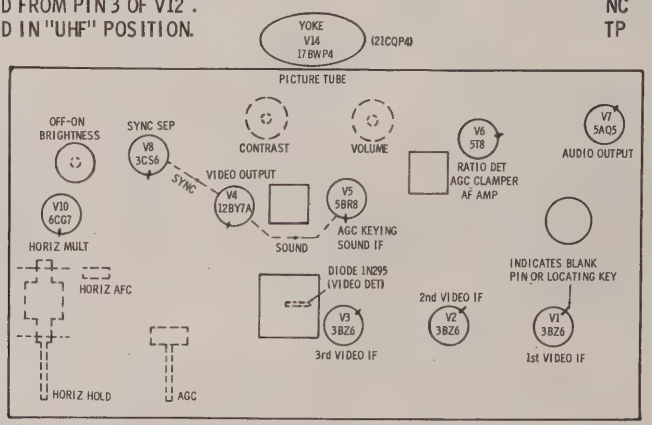
TUNER 323-0090 (54-95604-9) - RIGHT SIDE

RESISTANCE MEASUREMENTS

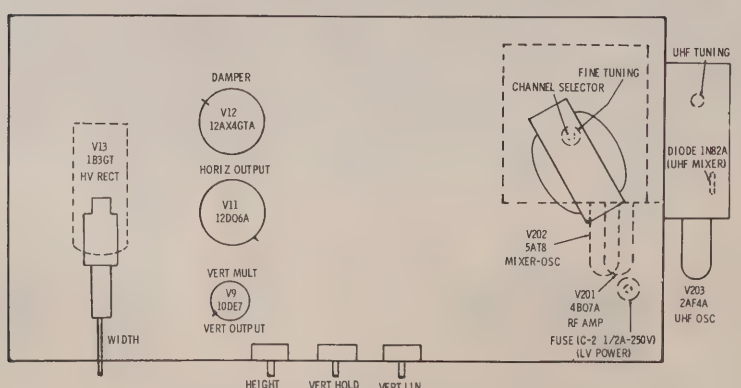
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	325K	47Ω	14Ω	13Ω	†1900Ω	†1900Ω	0Ω		
V2	3BZ6	.1Ω	180Ω	13Ω	12Ω	†1900Ω	†1900Ω	0Ω		
V3	3BZ6	.1Ω	180Ω	12Ω	11Ω	†2900Ω	†2900Ω	0Ω		
V4	12BY7A	27Ω	3300Ω	0Ω	7Ω	7Ω	4.5Ω	†5000Ω	†1400Ω	0Ω
V5	5BR8	†50K	200K	●†65K	4.5Ω	2.5Ω	†15K	†15K	150Ω	10K
V6	5T8	INF	27K	INF	1Ω	0Ω	650K	0Ω	10meg	†470K
V7	5AQ5	470K	270Ω	2.5Ω	1Ω	†930Ω	†470Ω	470K		
V8	3CS6	†1meg	0Ω	9Ω	8Ω	†35K	†6000Ω	1.3meg		
V9	10DE7	†200Ω	●1.3meg	●1.3meg	19Ω	17Ω	●†2.2meg	●1.8meg	0Ω	150Ω
V10	6CG7	†10K	2.8meg	1000Ω	9Ω	11Ω	†47K	120K	1000Ω	0Ω
V11	12DQ6A	NC	25Ω	TP	†8200Ω	1meg	TP	22Ω	0Ω	TOP CAP ‡13.8Ω
V12	12AX4GTA	NC	TP	¶1.2meg	NC	†52Ω	TP	22Ω	19Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡275Ω
V14	17BWP4	NC	●430K	7Ω	8Ω	30K	‡830K	‡830K		
V201	4BQ7A	†1000Ω	300K	INF	5.5Ω	14.5Ω	INF	600K	0Ω	0Ω
V202	5AT8	15K	†4700Ω	0Ω	15.5Ω	17Ω	†3200Ω	†6100Ω	0Ω	130K
V203	2AF4A	*†6100Ω	*720Ω	14.5Ω	14Ω	0Ω	*7800Ω	†*6100Ω		
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 265V SOURCE.
‡ MEASURED FROM PIN 3 OF V12.
* MEASURED IN "UHF" POSITION.

NC NO CONNECTION.
TP TIE POINT.



BOTTOM VIEW



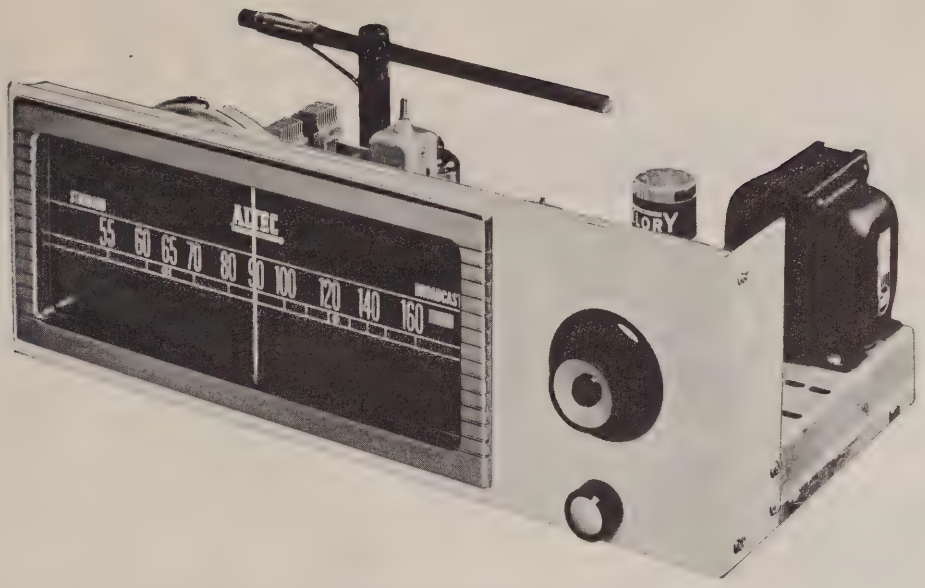
TUBE PLACEMENT CHART

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ALTEC LANSING MODEL 305A

ALTEC LANSING
MODEL 305A



TRADE NAME	Altec Lansing Model 305A
MANUFACTURER	Altec Lansing Corp., 9356 Santa Monica Blvd., Beverly Hills, California
TYPE SET	AC Operated AM Tuner
TUBES	Five
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles
RATING	17 Watts, .17 Amp @ 117 Volts AC
TUNING RANGE—BROADCAST	535 - 1620KC
SHORT WAVE	

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A3, A4, A8, A9..... GENERAL CEMENT #8721, 8722
WALSCO #2519

A5, A6, A7..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	AC probe to output jack. Common to Chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1600KC	1600KC	"	A5, A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum deflection.
3.		"	600KC	600KC		A8, A9, A10	"

DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H852

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BA6	
V2	Converter	6BE6	
V3	IF Amplifier	6BA6	

ITEM No.	USE	TYPE	NOTES
V4	Det. -AVC	6AL5	
V5	Cath. Follower	6AB4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Altec Lansing PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	250		AFH2-29	XB0241	FP221	TMD-27	D-115	TVL-2520
B	■40	250							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Altec Lansing PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	330			SI330	D6-331	LT6T33	UC-5333	5GA-T33	
C3	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C4	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C5	330			SI330	D6-331	LT6T33	UC-5333	5GA-T33	
C6	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C7	100			SI100	D6-101	LT6T1	UC-531	5GA-T1	
C8	100			SI100	D6-101	LT6T1	UC-531	5GA-T1	
C9	47			SI47	D6470	LT6Q47	UC-5447	5GA-Q47	
C10	47			SI47	D6470	LT6Q47	UC-5447	5GA-Q47	
C11	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C13	.22	400		P488N-22		CUB4P22	GEM-4022	4TM-P22	
C14	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C15	20			SI20	D6-200	C10Q2		5GA-Q2	①

① Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Altec Lansing PART No.	NOTES
R1	1meg			
R2	68Ω			
R3	1meg			
R4	22K			
R5	2.2meg			
R6	150Ω			①
R7	22K			

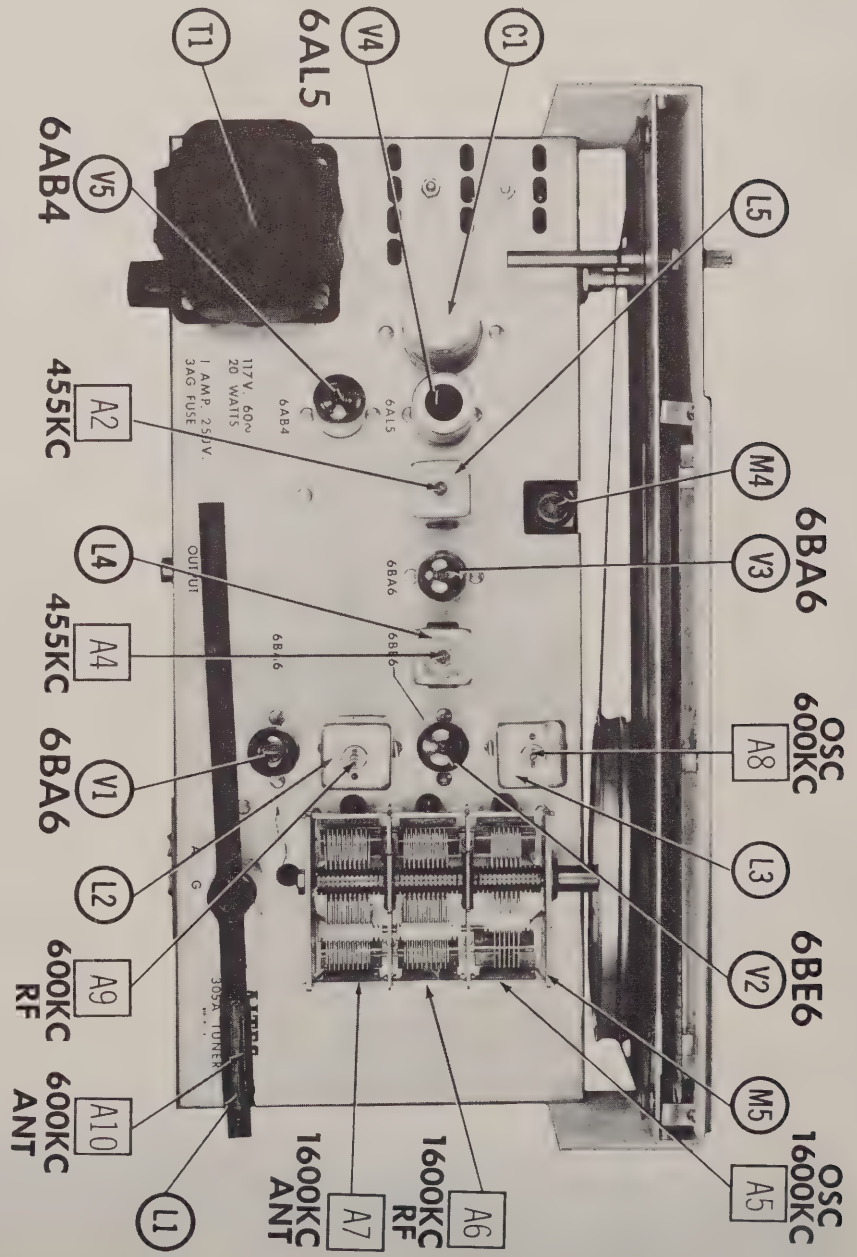
ITEM No.	RATING OHMS	RATING WATT	Altec Lansing PART No.	NOTES
R8	220K			
R9	470K			
R10	1meg			
R11	680Ω			
R12	22K			
R13	1000Ω	1		
R14	47Ω			

① Some versions may use 68Ω in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Altec Lansing PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick						
L2	RF Trans.	MX712					
L3	Osc. Coil	MX713					
L4	Input IF	114-43	16-6758	BC-352	12-C1	RF-1	
L5	Output IF	114-44	16-6758	BC-353	12-C2	RF-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Altec Lansing PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .172A	240 VCT @ .030A	6.3V @ 1.5A	6182	P9212 ①	P-3147 ①		PC8419 ①	24R12U ①	R-29A ①

① Drill new mounting hole

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	Altec Lansing PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.029A		K1734	RS050 SD-94 ①	50 K200 ①	① Silicon Type
M2	.029A		K1734	RS050 SD-94 ①	50 K200 ①	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Altec Lansing PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	1A 250V			312001. (3AG1A 250V)	342001	AGC1	HKP

MISCELLANEOUS

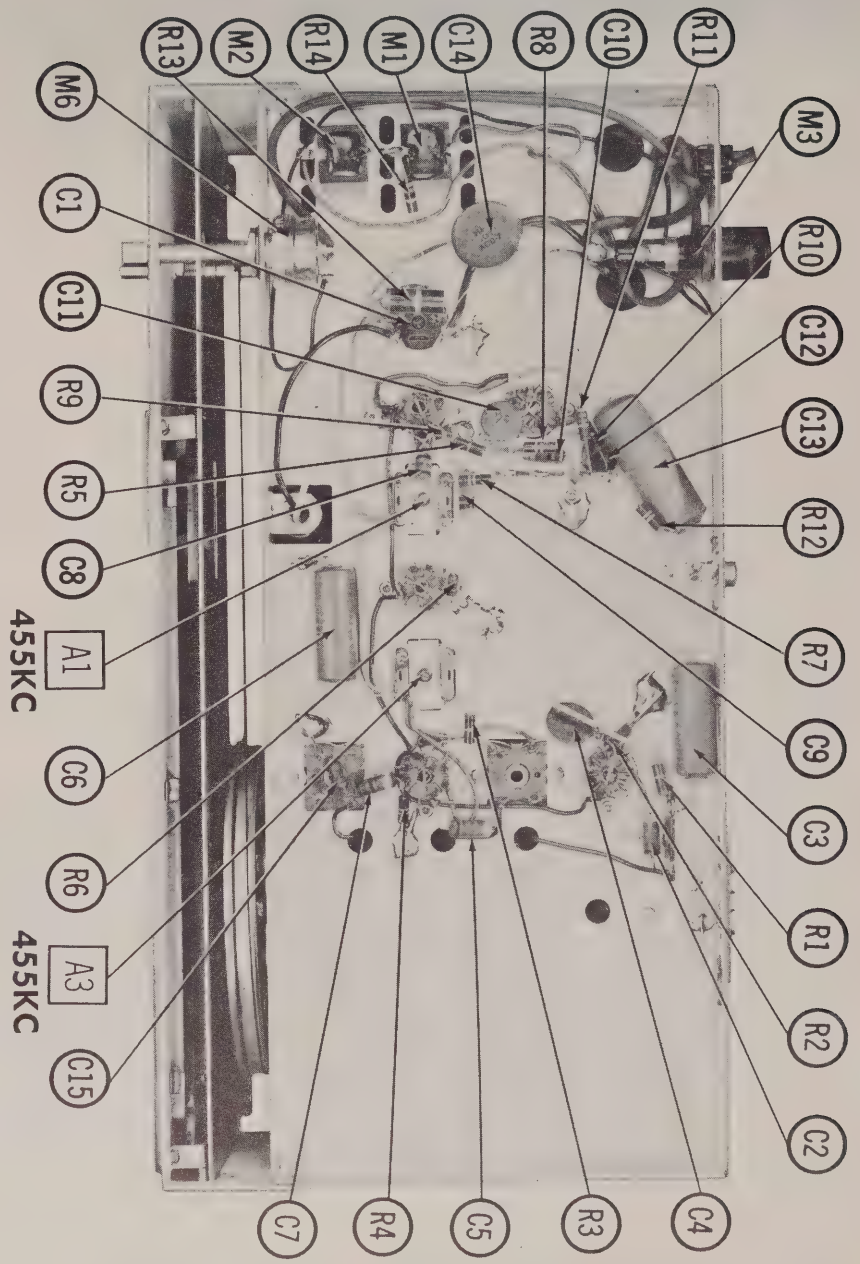
ITEM No.	PART NAME	Altec Lansing PART No.	NOTES
M4 M5 M6	Lamp Tuning Cap. Switch	RC888496SA	#44 3 Gang, Ant. 23-406mmf, RF. 21-409mmf, Osc. 34-195mmf Power On-Off (SPST, Rotary Snap Type)

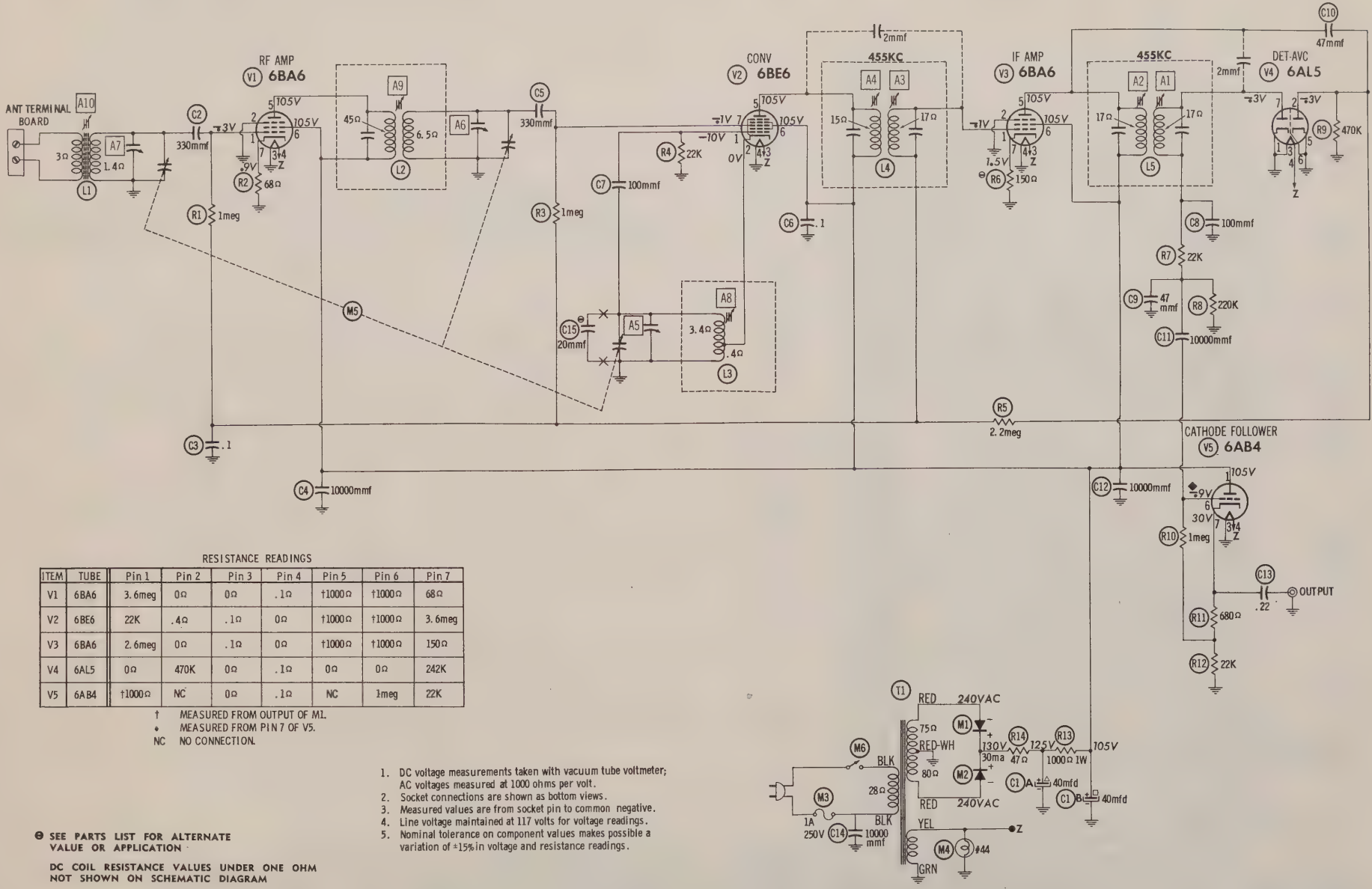
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BA6	3.6meg	0Ω	0Ω	.1Ω	†1000Ω	†1000Ω	68Ω
V2	6BE6	22K	.4Ω	.1Ω	0Ω	†1000Ω	†1000Ω	3.6meg
V3	6BA6	2.6meg	0Ω	.1Ω	0Ω	†1000Ω	†1000Ω	150Ω
V4	6AL5	0Ω	470K	0Ω	.1Ω	0Ω	0Ω	242K
V5	6AB4	†1000Ω	NC	0Ω	.1Ω	NC	1meg	22K

† MEASURED FROM OUTPUT OF M1.
◆ MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALTEC LANSING MODEL 305A

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

BELL SOUND
MODEL 3030

BELL SOUND
MODEL 3030

BELL SOUND
MODEL 3030

TRADE NAME	Bell Sound Model 3030		
MANUFACTURER	Bell Sound Systems Inc., 555 Marion Road, Columbus 7, Ohio		
TYPE SET	AC Operated Stereo Amplifier		
TUBES	Eleven		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	105 Watts, 1.04 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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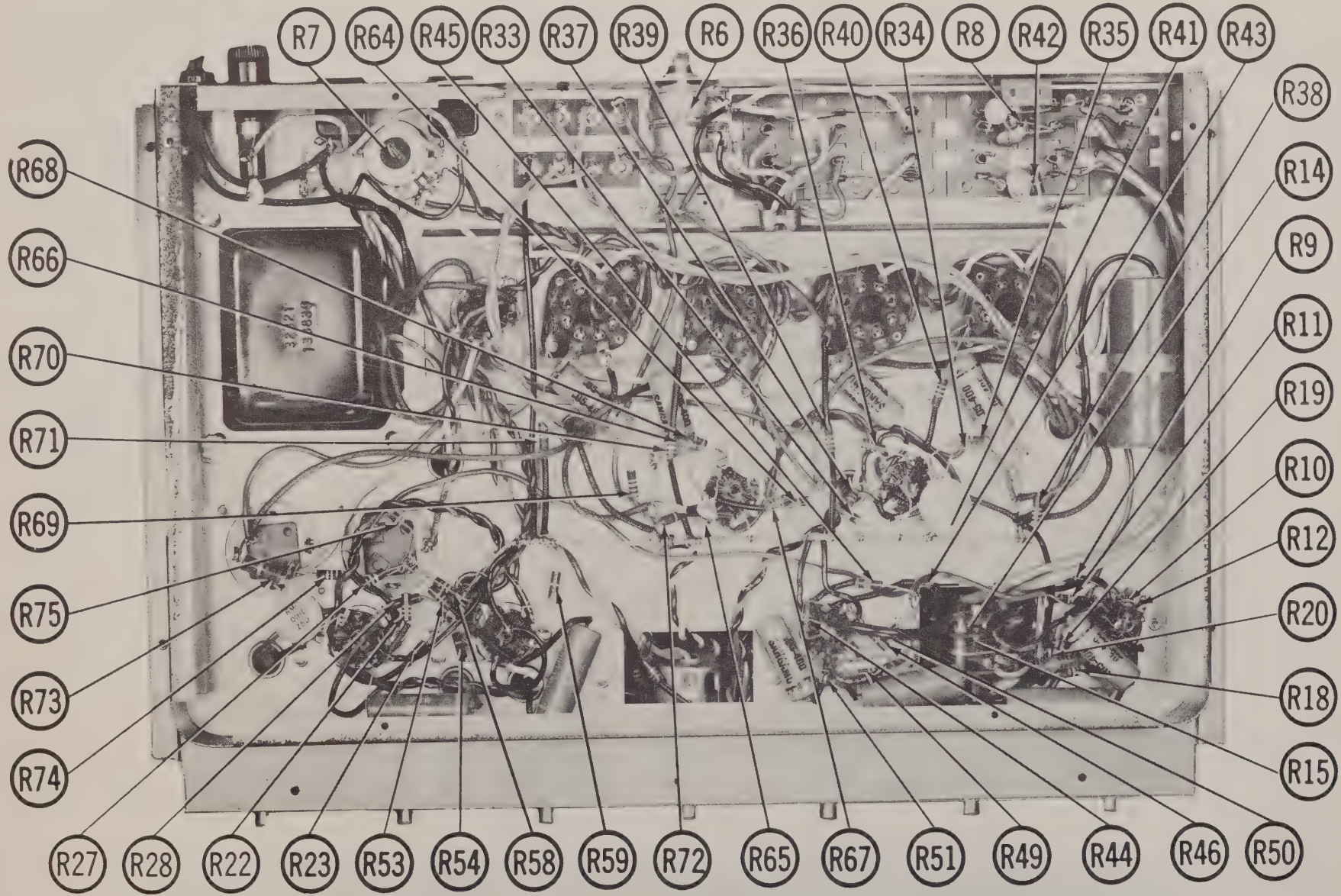
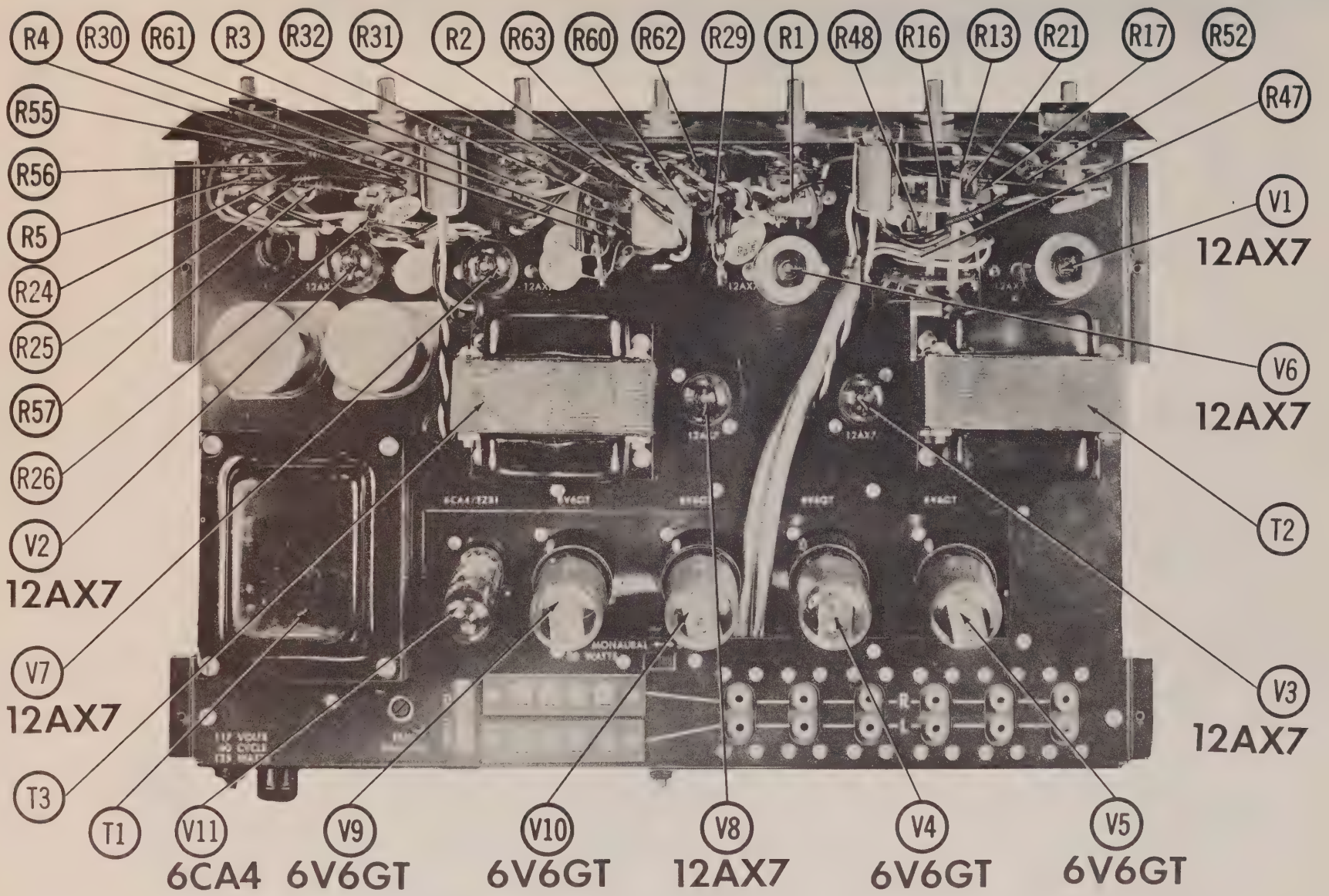
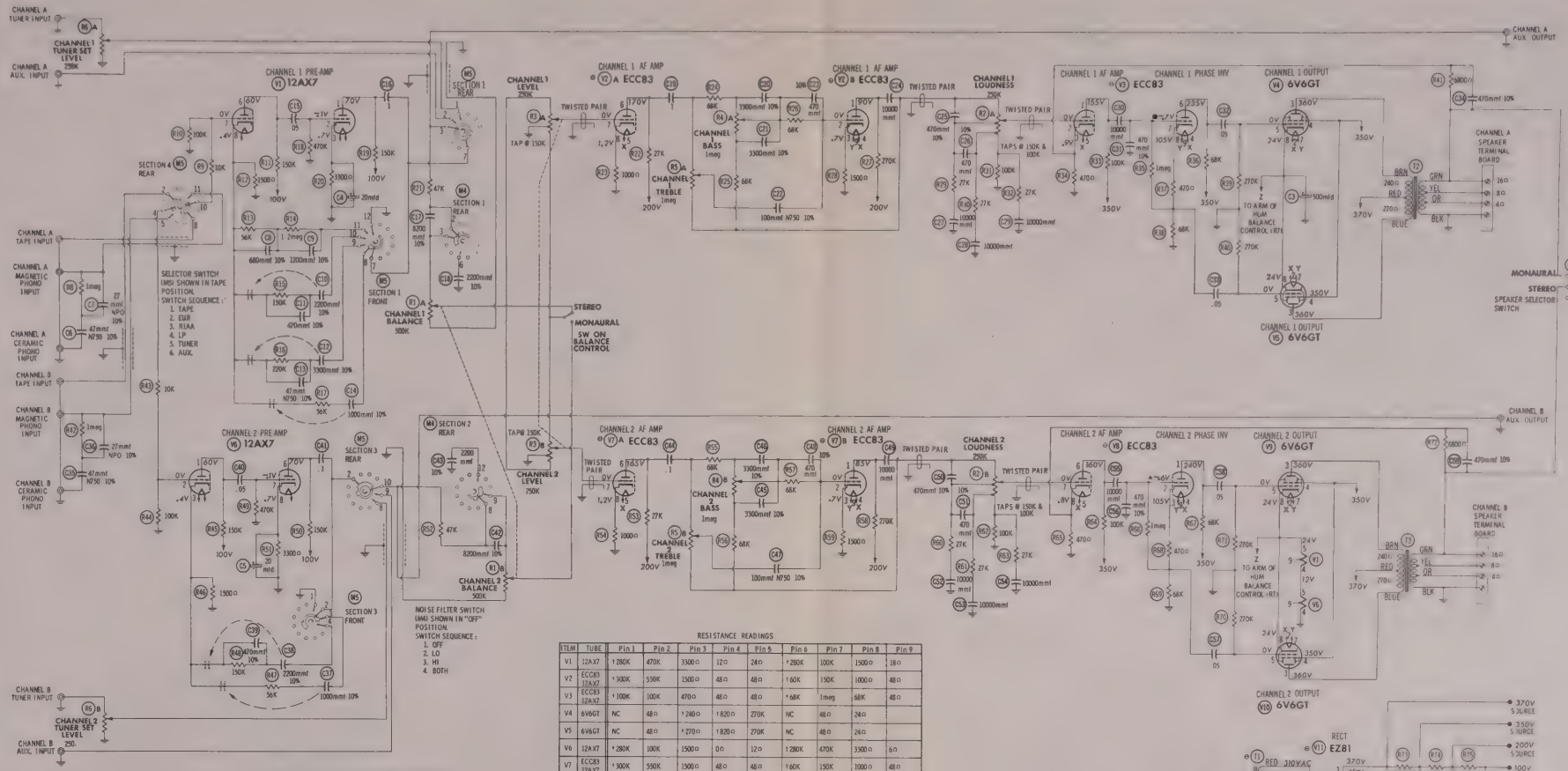


CHASSIS BOTTOM VIEW - RESISTOR IDENT.



CHASSIS TOP VIEW - RESISTOR, TUBE & TRANSFORMER IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†280K	470K	3300Ω	12Ω	24Ω	†280K	100K	1500Ω	18Ω
V2	ECC83 12AX7	†300K	550K	1500Ω	48Ω	48Ω	†60K	150K	1000Ω	48Ω
V3	ECC83 12AX7	†100K	100K	470Ω	48Ω	48Ω	†68K	1meg	68K	48Ω
V4	6V6GT	NC	48Ω	†240Ω	†820Ω	270K	NC	48Ω	24Ω	
V5	6V6GT	NC	48Ω	†270Ω	†820Ω	270K	NC	48Ω	24Ω	
V6	12AX7	†280K	100K	1500Ω	0Ω	12Ω	†280K	470K	3300Ω	6Ω
V7	ECC83 12AX7	†300K	550K	1500Ω	48Ω	48Ω	†60K	150K	1000Ω	48Ω
V8	ECC83 12AX7	†68K	1meg	68K	48Ω	48Ω	†100K	100K	470Ω	48Ω
V9	6V6GT	NC	48Ω	†240Ω	†820Ω	270K	NC	48Ω	24Ω	
V10	6V6GT	NC	48Ω	†270Ω	†820Ω	270K	NC	48Ω	24Ω	
V11	EZ81 6CA4	52Ω	NC	¶	48Ω	48Ω	NC	57Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V11.
∞ MEASURED FROM PIN 8 OF V3.
▲ MEASURED FROM PIN 3 OF V8.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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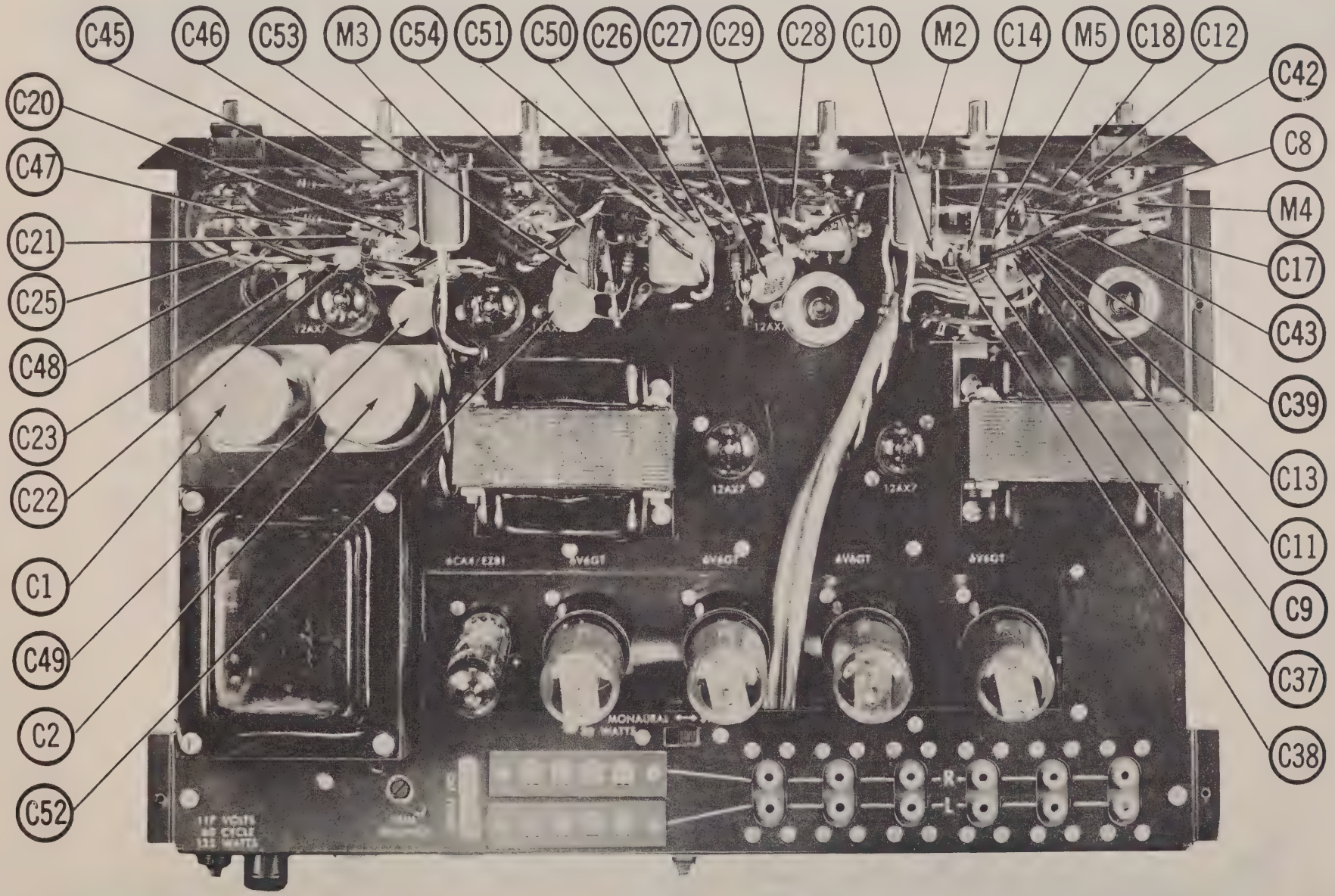
BELL SOUND MODEL 3030



CHASSIS TOP VIEW - CAPACITOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Channel 1 Preamp.	12AX7
V2	Channel 1 AF Amp.	ECC83/12AX7 ①
V3	Channel 1 AF Amp. - Phase Inverter	ECC83/12AX7 ①
V4	Channel 1 Output	6V6GT
V5	Channel 1 Output	6V6GT

ITEM No.	USE	TYPE
V6	Channel 2 Preamp.	12AX7
V7	Channel 2 AF Amp.	ECC83/12AX7 ①
V8	Channel 2 AF Amp. - Phase Inverter	ECC83/12AX7 ①
V9	Channel 2 Output	6V6GT
V10	Channel 2 Output	6V6GT
V11	Rectifier	EZ81/6CA4 ①

① Domestic type listed may not be directly interchangeable in some instances.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	23B29	AFH2-54	B0440		TMD-53	D-230	TVLS-2764.1*
B	▲40	450			BR2045		TD-20-450	MT-4520	
C2A	▲40	450	23B29	AFH2-54	B0440		TMD-53	D-230	TVLS-2764.1*
B	▲40	450			BR2045		TD-20-450	MT-4520	
C3	500	25	23B24	PRS24V500	BR5002	TC2505	TD500-25	MTH-2550	TVA-1209
C4	20	6		PWE6020	NL20-6	TT15X20	TD-25-25	MQ-0320	TE-1091
C5	20	6		PWE6020	NL20-6	TT15X20	TD-25-25	MQ-0320	TE-1091

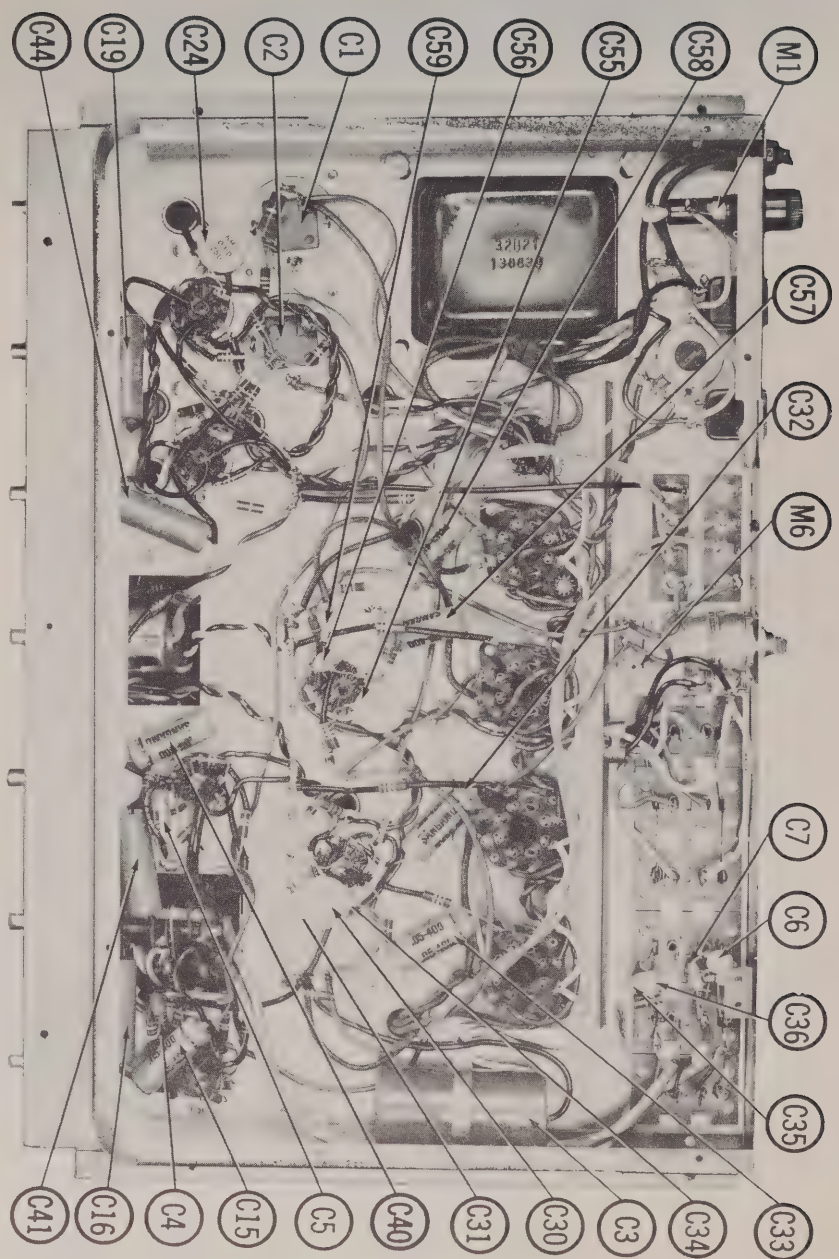
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	47			N750-DI 47	DTN-47	C10Q47U		5TCU-Q47	N750 10%
C7	27					C10Q27C			NPO 10%
C8	680				D6-681	1R5T68		MS-368	10%
C9	1200					1R5D12		MS-212	10%
C10	2200					1R5D22		MS-222	10%
C11	470				D6-471	5R5T47		MS-347	10%
C12	3300					1R5D33		MS-233	10%
C13	47			N750-DI 47	DTN-47	C10Q47U		5TCU-Q47	N750 10%
C14	1000					1R5D1	MCB255	MS-21	10%
C15	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C16	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C17	8200								10%
C18	2200					1R5D22		MS-222	10%
C19	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C20	3300					1R5D33		MS-233	10%
C21	3300					1R5D33		MS-233	10%
C22	100			N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750 10%
C23	470				D6-471	5R5T47		MS-347	10%
C24	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C25	470				D6-471	5R5T47		MS-347	10%
C26	470				D6-471	5R5T47		MS-347	10%
C27	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C28	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C29	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C30	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C31	470				D6-471	5R5T47		MS-347	10%
C32	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C33	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C34	470				D6-471	5R5T47		MS-347	10%
C35	47			N750-DI 47	DTN-47	C10Q47U		5TCU-Q47	N750 10%
C36	27					C10Q27C			NPO 10%
C37	1000					1R5D1	MCB255	MS-21	10%
C38	2200					1R5D22		MS-222	10%
C39	470				D6-471	5R5T47		MS-347	10%
C40	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C41	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C42	8200								10%
C43	2200					1R5D22		MS-222	10%

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C44	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C45	3300					1R5D33		MS-233	10%
C46	3300					1R5D33		MS-233	10%
C47	100			N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750 10%
C48	470				D6-471	5R5T47		MS-347	10%
C49	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C50	470				D6-471	5R5T47		MS-347	10%
C51	470				D6-471	5R5T47		MS-347	10%
C52	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C53	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C54	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C55	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C56	470				D6-471	5R5T47		MS-347	10%
C57	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C58	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C59	470				D6-471	5R5T47		MS-347	10%

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BELL SOUND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	15B23A		AD47-500K-Z			Balance, Channel 1
B	500K	½			Not Req.			Balance, Channel 2
C	Shaft				FS-3			
D	Switch				SWE-21			Stereo-Monaural
R2A	250K	½	15B25					Loudness, Tap ② 100K & 150K Channel 1
B	250K	½						Loudness, Tap ② 100K & 150K Channel 2
C	Switch							Push-Pull Type (Power)
R3A	250K	½	15B22					Level, Tap ② 150K Chan. 1
B	250K	½						Level, Tap ② 150K Chan. 2
R4A	1meg	½	15B24	BB-108	AD47-1meg-S	Q13-137		Bass, Channel 1
B	1meg	½		Not Req.	Not Req.	M13-137		Bass, Channel 2
C	Shaft			Not Req.	FS-3	Not Req.		
R5A	1meg	½	15B24	BB-108	AD47-1meg-S	Q13-137		Treble, Channel 1
B	1meg	½		Not Req.	Not Req.	M13-137		Treble, Channel 2
C	Shaft			Not Req.	FS-3	Not Req.		
R6A	250K	½	15B21	BB-103	AD47-250K-S	Q13-130		Tuner Set Level, Channel 1
B	250K	½		Not Req.	Not Req.	M13-130		Tuner Set Level, Channel 2
C	Shaft			Not Req.	FS-3	Not Req.		
R7A	200Ω	½	15B31	AB-2		Q11-201		Hum Balance, Note 1
B	Shaft			AK-1		Not Req.		

Note 1. Control may be 2W wire wound in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	BELL SOUND PART No.	NOTES
R8	1meg			
R9	10K			
R10	100K			
R11	150K			
R12	1500Ω			
R13	56K			
R14	1.2meg			
R15	150K			
R16	220K			
R17	56K			
R18	470K			
R19	150K			
R20	3300Ω			
R21	47K			
R22	27K			
R23	1000Ω			
R24	68K			
R25	68K			
R26	68K			
R27	270K			
R28	1500Ω			
R29	27K			
R30	27K			
R31	100K			
R32	27K			
R33	100K			
R34	470Ω			
R35	1meg			
R36	68K			
R37	470Ω			
R38	68K			
R39	270K			

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	BELL SOUND PART No.	NOTES
R40	270K			
R41	6800Ω			
R42	1meg			
R43	10K			
R44	100K			
R45	150K			
R46	1500Ω			
R47	56K			
R48	150K			
R49	470K			
R50	150K			
R51	3300Ω			
R52	47K			
R53	27K			
R54	1000Ω			
R55	68K			
R56	68K			
R57	68K			
R58	270K			
R59	1500Ω			
R60	27K			
R61	27K			
R62	100K			
R63	27K			
R64	100K			
R65	470Ω			
R66	1meg			
R67	68K			
R68	470Ω			
R69	68K			
R70	270K			
R71	270K			
R72	6800Ω			
R73	820Ω	1		
R74	33K			
R75	100K			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA BELL SOUND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② 1.04A	600VCT ② .165A	6.3V ② 4.2A	32B21 ①						

① Part #32B36 (50-60~) available on special order.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA BELL SOUND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	8200Ω CT	16Ω Tap ② 8Ω	32B20	Z1011 ①	A-3027①	AU-609①	A-3870①	22S74 ①	S-55X ①	① Drill new mounting holes.
T3	8200Ω CT	16Ω Tap ② 8Ω	32B20	Z1011 ①	A-3027①	AU-609①	A-3870①	22S74 ①	S-55X ①	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA BELL SOUND PART No. FUSE	BELL SOUND PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	2A 250V			312002. (3AG 2A 250V)	342001	AGC2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M2	Lamp	B20044P2	#51
M3	Lamp	B20044P2	#51
M4	Switch	43B31	Noise Filter (4 Position, Rotary, Wafer Type)
M5	Switch	43B32	Selector (6 Position, Rotary, Wafer Type)
M6	Switch	B20219P2	Speaker Selector (SPDT, Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

GRUNDIG MAJESTIC MODELS TK830, TK830E, TK830U

GRUNDIG MAJESTIC MODELS
TK830, TK830E, TK830U

GRUNDIG MAJESTIC MODELS
TK830, TK830E, TK830U

GENERAL INFORMATION

Grundig Majestic Models TK830, TK830E, and TK830U tape recorders can record and play back on 1/4" tape. The two-track system is employed so that the full length of tape may be used twice. The recorders can record and play back in both directions.

Tape speeds are 7 1/2 and 3 3/4 ips, giving a playback time of approximately one hour for standard tape at 7 1/2 ips and two hours at 3 3/4 ips. Electromagnetic changeover from Track I to Track II takes approximately 1.5 seconds at 7 1/2 ips and less than one second at 3 3/4 ips; thus, virtually continuous track-to-track recording can be made. Three types of high-impedance input connections with push-button selection are available.

Two recording and two erasing heads are used, offset for the respective Track I and Track II positions. The Trick button (Loudspeaker/Eraser Cut-out button), together with the Temporary Stop/Safety button and Recording button depressed, enables a second recording to be superimposed upon a previous recording.

Supplied by:

Majestic International Sales Corporation

743 West La Salle Street

Chicago 10, Illinois

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

C378

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SPECIFICATIONS

Tape Speeds:

3 3/4 and 7 1/2 ips

Tape Direction:

Both directions without inverting tape reels

Tape Reels:

Maximum, 7" reels.

Running Time per Tape (Standard 1200-ft. tape):

7 1/2 ips--30 minutes each track

3 3/4 ips--60 minutes each track

Inputs:

Microphone; 1.5 millivolts/ 300K, contact 1 of input socket.

AM-FM tuner; 5 millivolts/ 250K, contact 1 of input socket.

Radio-TV-Phono; 100 millivolts/ 1meg, contact 3 of input socket.

Outputs:

External speaker; 12 ohms, contact 1 of output socket.

Amplifier; 0.6 volt/ 5K, contact 3 of output socket and contact 3 of input socket.

Amplifier Output:

6 watts (double-ended push-pull output stage)

Fast Forward and Rewind Time (Standard 1200-ft. tape):

7 1/2 ips--130 seconds

Automatic Stop Switch:

Electromagnetic

Tape Run System:

Recording and playback in both directions, operated by track buttons.

Frequency Range:

At 7 1/2 ips--50 to approximately 15,000 cps

At 3 3/4 ips--50 to approximately 10,000 cps

Recording Level Indicator:

Magic eye

Remote Control:

Foot switch 222 for start, stop, and backspacing

Loudspeaker:

3 permanent dynamic speakers, 18 x 13 cm

Tubes:

EF 86, ECC81, ECC83, EL95, EL95, EL95, EM 71, and 4 selenium rectifiers.

TK830

AC Voltage:

Suitable for 50 cps AC only; 117 (110-127), 150, 200, 220, and 240 volts

Consumption:

Approximately 85 watts

Fuses:

5 x 20 mm, Din 41571, surge resisting.

AC fuses; 117 volt--1.25 amps; 150 volts--1.0 amp; 200-240V--.08 amps.

HT fuse; 0.125 amp.

TK830U

AC Voltages:

Suitable for 50 and 60 cps, convertible. AC only: 117 (110-127), 150, 200, 220, and 240 volts.

Consumption:

At 50 cps, approximately 90 watts.

At 60 cps, approximately 100 watts.

Fuses:

5 x 20 mm, Din 41571, surge resisting.

AC fuses; 117 volts--1.6 amps; 150 volts--1.25 amps; 200-240 volts--1.0 amp.

HT fuse; 0.125 amp.

TK830E/60 cps

AC Voltages:

Suitable for 60 cps AC only; 117 (110-127), 150, 200, 220, and 240 volts.

Consumption:

Approximately 65 watts

Fuses:

5 x 20 mm, Din 41571, surge resisting.

AC fuses; 117 volts--1.6 amps; 150 volts--1.[illegible] amps; 200-240 volts--1.0 amp.

HT fuse; 0.125 amp.

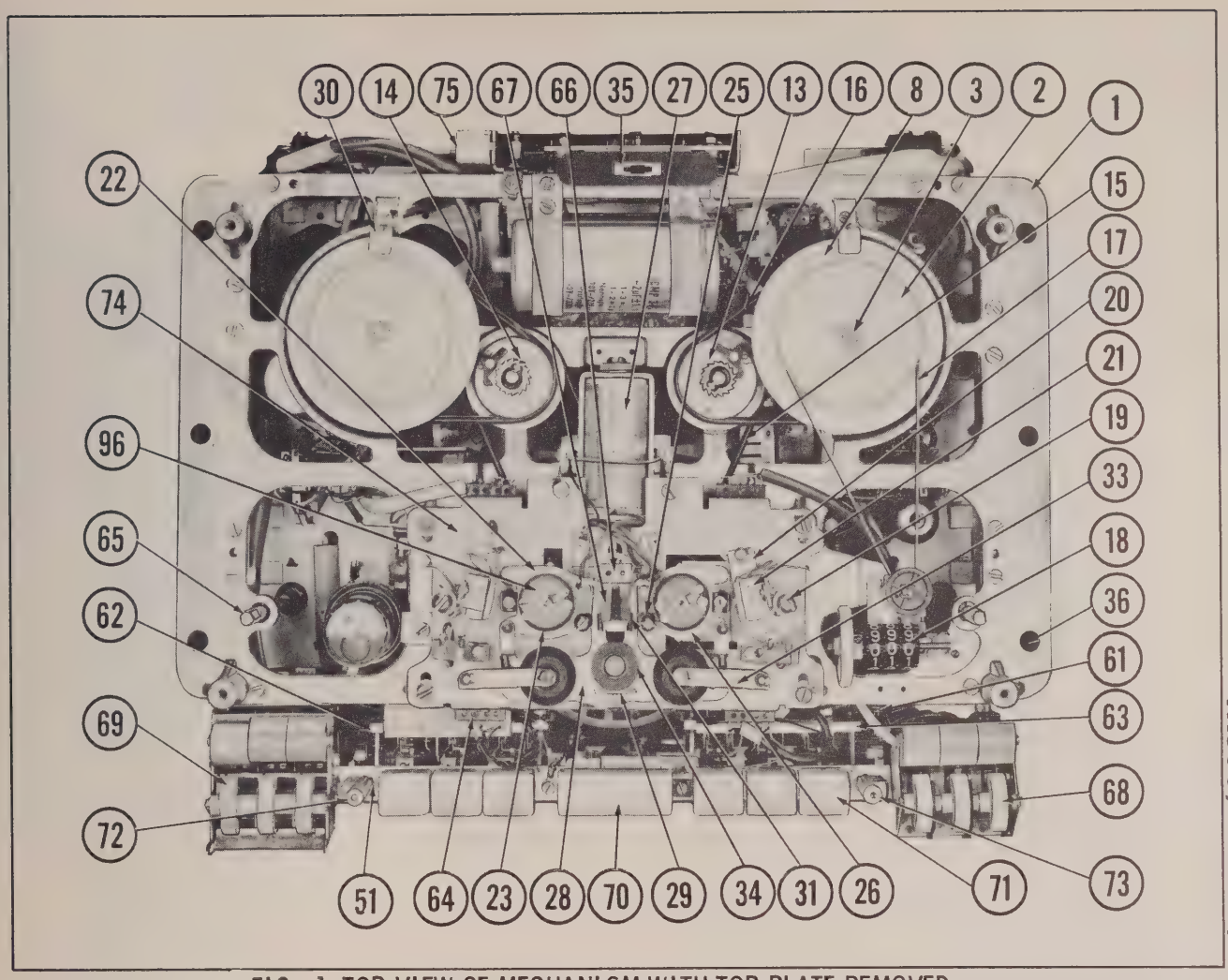


FIG. 1 TOP VIEW OF MECHANISM WITH TOP PLATE REMOVED.

FUNCTION OF CONTROLS

Speed Switch

Set the Speed switch before the recording is started, although its position can be altered while the tape is moving. Never switch during fast rewind from fast (7 1/2 ips) to slow (3 3/4 ips) tape speed. However, switching from slow to fast speed is possible; to the right for 7 1/2 ips, to the left for 3 3/4 ips.

Recording Level Control

The Recording Level knob controls the quality of the recording.

Input Selector

The three discs on the left side of recorder are used to select any one of the three different inputs. The marking above the buttons corresponds to the appropriate sockets at the back of the recorder. Any or all of the input leads can remain connected to the input socket at the rear of the recorder at all times. To select one of the inputs, pull the notch of the disc forward. A white field indicates the on position, a red field, the off position of the particular input selection. The input selector does not function during playback.

Volume Control On-Off Switch

The Off position is marked by a red dot. During recording, this control is used for monitoring and for adjusting the volume in the built-in speakers or earphones. During playback, this switch controls the volume.

Tape Counter

The tape counter registers "000" to "999". The reading may be noted while recording, and reference to any given point on the tape may be rapidly made. After a recorded tape has been logged or referenced, always "zero" the indicator before playing the recorder and before the tape is threaded on the reel.

Multisonic Tone Control

The Multisonic tone control is used only when playing back through the built-in speakers or through an external speaker. The left-hand disc of the Multisonic tone control emphasizes the bass boost, the right-hand disc, the treble boost. By means of the middle disc, all notes between the two extremities of the bass and treble notes are controlled.

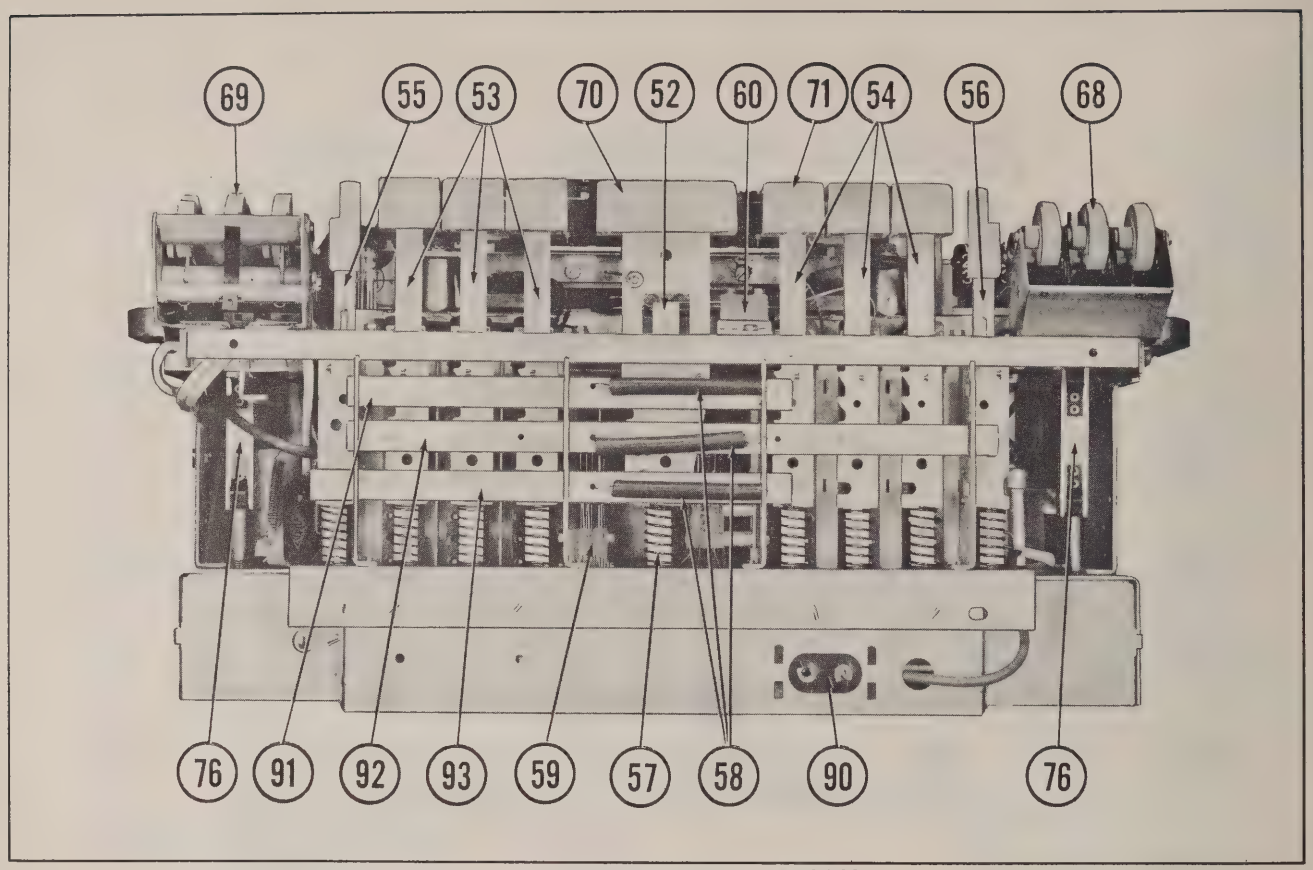


FIG. 2 FRONT VIEW OF MECHANISM

Stop Bar

The Stop bar stops the motor and returns all depressed buttons except the track buttons to neutral.

Safety Button/Temporary Stop Button

This button prevents accidental erasure. Moving the depressed Safety button slightly forward locks it. The tape will not move until this button is released. The same button also serves as a temporary stop, halting the recorder in either record or playback only as long as the button is depressed.

Trick Button-Speaker Control

The Trick button permits blending of voices, sound effects, or music into previous recordings. The same button also cuts off the speakers. Depressing the button switches off the built-in-speaker. Depressing and moving the button slightly forward will lock it.

Recording Button

The Recording button is used with the Safety button to place the recorder in the Record position.

Playback Button

The Playback button places the recorder in the Playback position.

Track II Button

The Track II button starts the recorder operating on Track II, with the tape moving from right to left. The recorder will either record or play back, according to which button has been depressed.

Track I Button

Same as Track II button, except tape moves from left to right.

Fast Wind Buttons

These two buttons are used to find the beginning of a particular recording. They start the reels turning rapidly. The entire tape can be wound from one reel to the other in approximately two minutes.

NOTE: If either Fast Wind buttons are in use, the Stop bar must be depressed before changing functions. In other words, don't go from Fast Wind to Recording or Playback without first depressing the Stop bar. When using either of these buttons, depress and release them immediately.

Voltage Selector

To set the voltage selector to another voltage, pull out voltage tapping plug (83) in voltage selector (84) and reset so that the voltage closest to the power supply voltage is visible in the tiny window of voltage tapping plug (83).

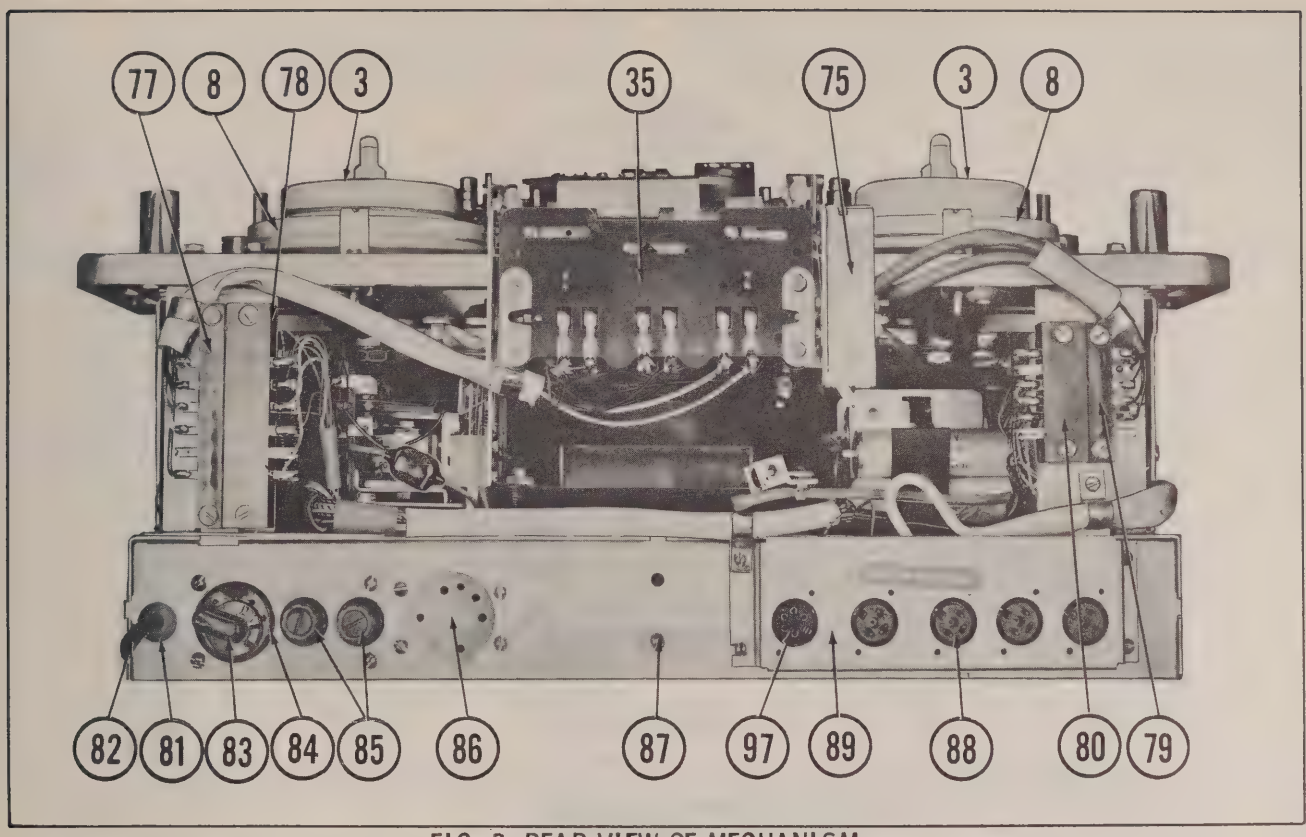


FIG. 3 REAR VIEW OF MECHANISM

OPERATING INSTRUCTIONS

Threading the Tape

1. Two reels are supplied, one full and the other empty.
2. The full reel fits on the left-hand spindle, the empty one on the right.
3. Hold full reel in left hand with loose end of tape hanging down left side of reel. Now place the reel on the left-hand spindle. Turn the reel slightly until it falls into place and is held securely by the ridges on the spindle.
4. Place empty reel on right-hand spindle.
5. Place tape into sound channel and slip the free end into slot in empty reel. Turn empty reel counterclockwise until tape is secured to reel.

NOTE: : The tape has a shiny and a dull side. Always be sure the shiny side faces the buttons.

Turning Recorder On

Once the voltage selector has been adjusted to agree with rating of wall receptacle, the recorder may be plugged in. Turn Volume Control/ On-Off switch to the right. After a few seconds (while the tubes warm up), the recorder is ready to record or playback.

To Record from Microphone

1. Depress Track I button.
2. Depress the small Safety button on the left of the Recording button and then depress the Recording button. Keep Safety button depressed (or locked). Set Volume control to low level.
3. Talk into microphone, holding it about 18 inches from the mouth. The Magic Eye will start to flutter. Adjust Record Level control until Magic Eye just closes on the loud parts of speech. If the Volume control is too high, the recording will be distorted.
4. Release Safety button. Tape will move from left-hand to right-hand reel, and any sound entering the microphone will be recorded on tape.

NOTE: To switch to the second track, depress Track II button. The tape will move in the opposite direction, and the recording can be continued on other half of tape.

To Record from AM-FM Radio

1. Connect lead 237 to tape recorder socket of radio and to input socket of tape recorder marked AM-FM Tuner.
2. Operate middle input selector wheel.
3. Depress and lock Safety button. Depress Record button and tune accurately to broadcasting station.

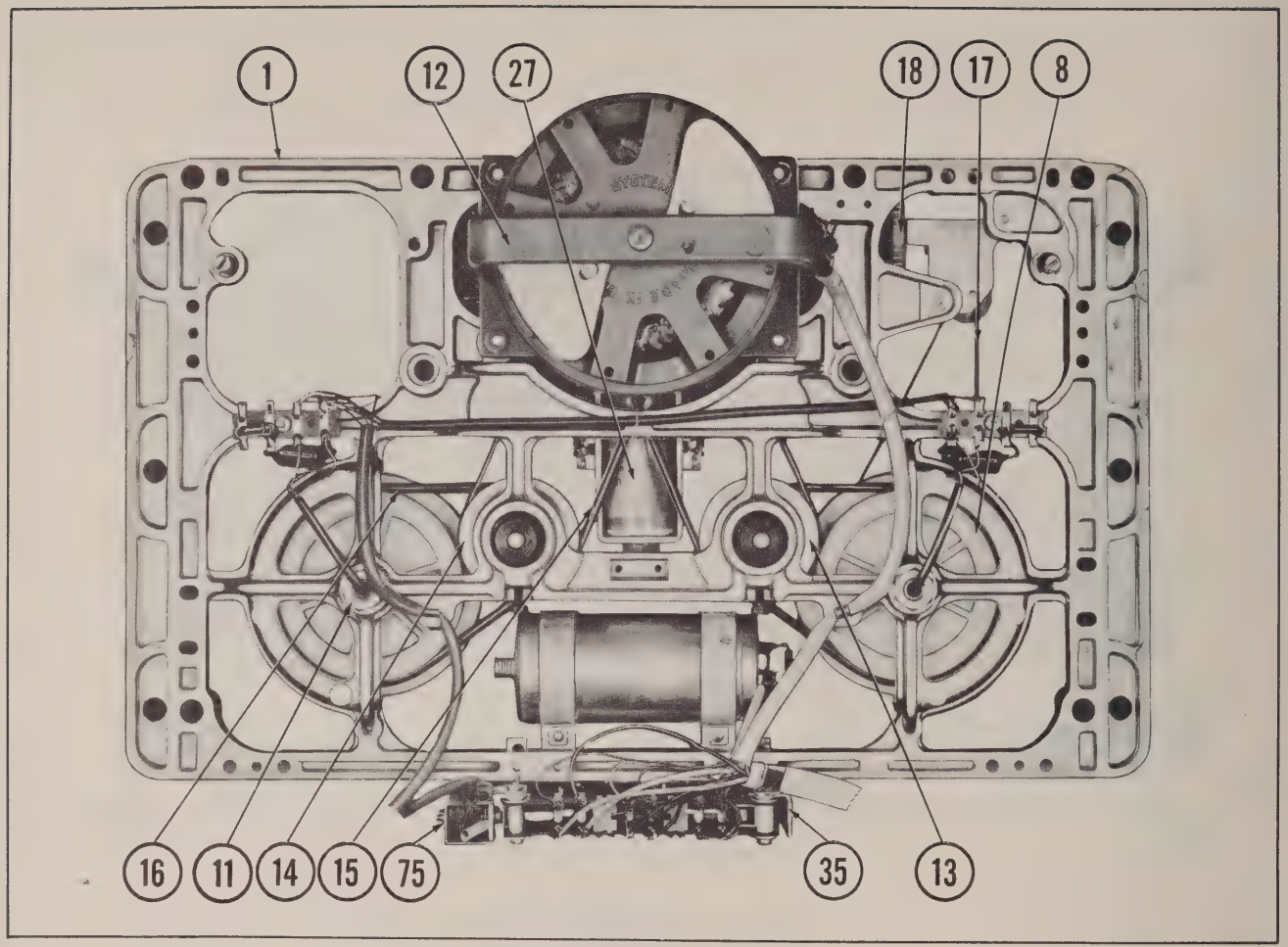


FIG. 4 BOTTOM VIEW OF MECHANISM

4. Turn Recording Level control clockwise until the two sections of green light of the Magic Eye just begin to meet at the loudest passages.

5. Release Safety button.

6. At end of recording, depress Stop bar and mark the reading of the tape counter.

NOTE: Lead 237 has 3-way plugs on both ends; therefore, the radio must have a corresponding socket for proper connection. See "Installing Socket for Connecting Tape Recorder to Radio."

To Record from Phonograph

1. Connect the leads from the pickup arm of record player to the red and black banana plugs of connection lead 233.

2. Connect the 3-prong plug to socket marked Radio-TV-Phono or recorder.

3. Fasten the ground of the pickup to the sleeve of the plug.

4. Operate outside input selector wheel.

5. Start the record player.

6. Place recorder in Record position.

To Record a Telephone Conversation

The Grundig Telephone Adaptor 243T is a small coil hidden in a plastic case. This coil picks up the magnetic field from the coils which form part of all telephones. With the coil, both incoming and outgoing conversations can be recorded.

The plug of the adaptor fits into the socket marked AM-FM Tuner. Slightly moisten the rubber disc on the bottom of the Adaptor to improve its sticking power, and press onto the telephone.

Different types of telephones require a different position of the Adaptor. Here is how to find the best position for each type:

1. Plug the Adaptor into the socket marked AM-FM Tuner at rear of recorder, and switch on recorder.

2. Proceed as for recording, with the AM-FM Tuner disc (middle selector) selected. Turn Recording Level control to a convenient level. Lift the telephone receiver so that the dial tone can be heard. Move the Adaptor slowly around the base of the telephone, with the rubber disc just touching the telephone. The Magic Eye will oscillate, and the dial tone will be heard through the speaker. Do not forget to adjust the monitor control. When the Magic Eye

registers its maximum deflection and the dial tone is loudest, the best position has been reached. Fasten the Adaptor to the telephone at this point.

NOTE: The Adaptor is sensitive to all kinds of magnetic fields and should be used at least four and one-half feet from the recorder.

IMPORTANT: : It is against the law to record a telephone conversation, except under certain conditions. See your local authorities about these conditions before recording a conversation. Never record a conversation without the caller's permission under any circumstances.

To Play Recordings

1. Thread tape as described under "Threading Tape."
2. Set the two-speed selector knob to the speed at which the recording was made.
3. Depress the Playback button.
4. Adjust the Volume control and turn the wheels of the Multisonic tone control for desired tone level.

Automatic Stop

Metal foils at both ends of the tape automatically switch off the motor. The motor is switched off at the end of each track whether the recorder is recording, playing back, or fast winding. To start tape again after the motor has been switched off by the metal foils, depress the track button (which is already depressed) further.

High-Speed Fast Wind

To play a certain portion of tape again, the entire reel need not be rewound. Depress the correct button, depending on which direction the tape must be transported. The Fast Wind (right to left) button is next to the Track I button, and the Fast Wind (left to right) button is next to the Trick Button-Speaker control.

To Edit and Splice Tape

NOTE: Since one track cannot be edited and spliced without affecting the other track, recordings to be edited should be limited to one track only.

1. The tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements, etc., may be inserted between selections. Unused sections of tape can be spliced for re-use.
2. For best results, cut tape at a slight diagonal, join ends with splicing tape on the glossy side, and trim any excess width.

Installing Socket for Connecting Tape Recorder to Radio

For high-quality recording from a radio, a worthwhile improvement may be obtained by feeding the recorder directly from the detector diode. This makes the level of a recording independent from the setting of the radio volume control and bypasses the distortion of the output stage. The diode connection consists basically of a potential divider, which should be mounted as close as possible to the radio volume control. If DC is present on the volume control, a blocking capacitor should be added in series. The value of 1-2 megohms is based on a radio delivering apporximately 100 millivolts to the diode load. Where the voltage varies considerably from this figure, the value in megohms may be calculated by multiplying the voltage in volts by 17 (i. e., 200 millivolts requires 3.4 megohms).

Fig. 5 shows the measurements for the cutout in the rear of the chassis.

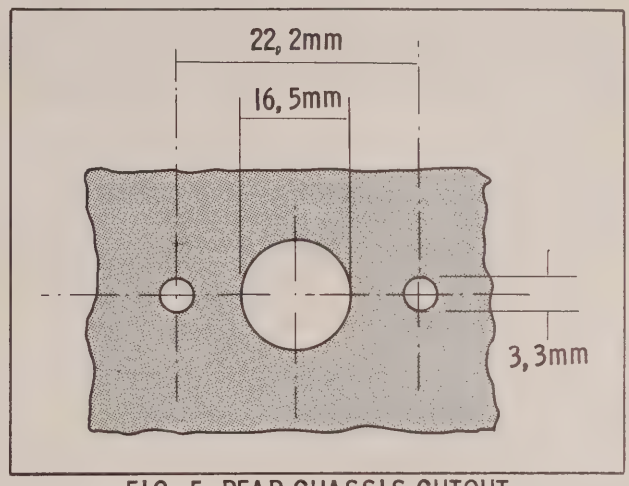


FIG. 5 REAR CHASSIS CUTOUT

Fig. 6 shows the wiring. Both resistors are connected to contact 1 (recording) of socket. Contact 2 is lead-to-ground connection of Volume control. For playback, contact 3 (playback) will be connected to phone socket. For this connection, use shield wire only if distance between connection points is large. Generally, the socket is ground by fastening it to the chassis, but the top of the socket housing can also be soldered to the chassis. Connection lead 237, equipped with 3-way plugs at both ends, is used to connect the tape recorder to the radio. The part number of the 3-way socket is No. 5784 (Din 41524).

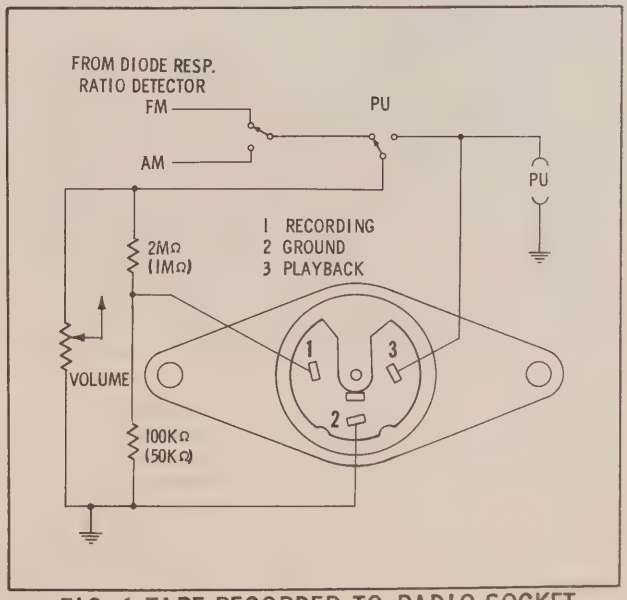


FIG. 6 TAPE RECORDER-TO-RADIO SOCKET

DISASSEMBLY INSTRUCTIONS

1. Remove the two control knobs and the two-speed knob.
2. Unscrew the four coil-slotted brass screws.
3. Lift off top deck (38) and unscrew the six small nuts securing the chassis to the cabinet.
4. Lift the chassis partly out of the cabinet.
5. Unplug the loudspeaker leads.

Now lift the chassis completely out of the cabinet. Never lift the chassis by the clutches because serious damage will result. When the chassis is clear of the cabinet, all tubes will be readily accessible. By removing the bottom screen, all components can be easily reached.

LUBRICATION

All bearings are oilite, and regular lubrication is unnecessary, After approximately 1,000 hours, however, lubrication may be required. Two types of motors are used, and they should be lubricated as follows:

1. Motor with oiling facilities in friction and lower ball bearing only--These types can be recognized by the shallow dish in the upper mounting plate, with an inserted felt ring, or by the cap, with an oiling hole. Oil the felt inserts and fill the containers for lubricant with light machine oil.
2. Motor with oiling facilities in lower friction bearing and ball bearing for spindle, and facilities for greasing upper friction bearing through a grease container--These types can be recognized by the shallow dish in the upper mounting plate, with cover and without felt insert. Lubricate the lower bearing as in step 1, and fill the grease container in the upper mounting plate with Sta-Put grease.

Clean all other self-lubricating bearings by wiping off dust, grease, and all other foreign matter. Then lubricate the bearings with machine oil. Avoid excessive oiling, because surplus oil will be thrown onto drive belts, clutches, pressure roller, or friction wheels.

CLEANING

Pressure Roller and Drive Capstan

Dirt or other foreign matter on the pressure roller or capstan will increase wow and may cause tape to jump from its guides. Remove any tape residue, dust, and dirt from the roller by holding a piece of fine sandpaper against the roller while it is rotating. Crocus paper is recommended for cleaning the drive capstan; its surface should always look highly polished.

ADJUSTMENTS

Electromagnetic Clutches

Clutch components or the complete clutch assembly may be easily adjusted or replaced. However, faults must be correctly diagnosed before any clutch repairs are attempted.

A braking action is obtained from the left clutch in the Record and Playback positions on Track I, and in the Fast Wind right to left. The right-hand clutch acts as a brake in the Record and Playback positions on Track II. Clutching coil (4) is not energized, and the felt insert of upper clutch spindle (3), which is braking, rests on the polished top of surface of its clutch drive pulley (8). The pulley is kept static by unidirectional drive pulley (13) or (14), to which it is coupled by drive belt (16). Upper clutch spindle (3) is rotated by the unreeling of the tape and exerts a braking action proportional to the weight of the tape or reel.

A small amount of torque is applied to the right-hand upper clutch spindle (3) in the Record and Playback positions on Track I, and to the left-hand upper clutch spindle (3) in the Record and Playback positions on Track II. Clutching coil (4) is not energized, and clutching disc (6) rests on its three washers (7) in clutch drive pulley (8). The pulley is driven at approximately 650 rpm at 7 1/2 ips and approximately 325 rpm at 3 3/4 ips, and a slipping clutch action occurs between the felt inserts of upper clutch spindle (3) and the top of clutch drive pulley (8). This action is directly proportional to the amount of tape on the reel; i.e., the torque increases at the weight of the tape increases. The tape pull should be reasonably uniform over the entire tape. In both Fast Wind positions, clutching coil (4) of the take-up clutch is energized. This lifts clutching disc (6) and locks it to the plastic insert of upper clutch spindle (3). The tape will then be rapidly wound onto the reel.

Replacing Clutch

To remove complete clutch (2), first disassemble unit and remove from cabinet (see "Disassembly Instructions").

1. Unsolder the two leads to clutching coil (4) and remove upper clutch spindle (3).
2. Remove bottom locking nuts (11) and lift out clutch.
3. Insert new assembly and half-tighten the bottom nut.
4. Insert two 0.2-mm steel washers between clutching coil (4) and upper clutch spindle (3). Rotate upper clutch spindle (3) and observe

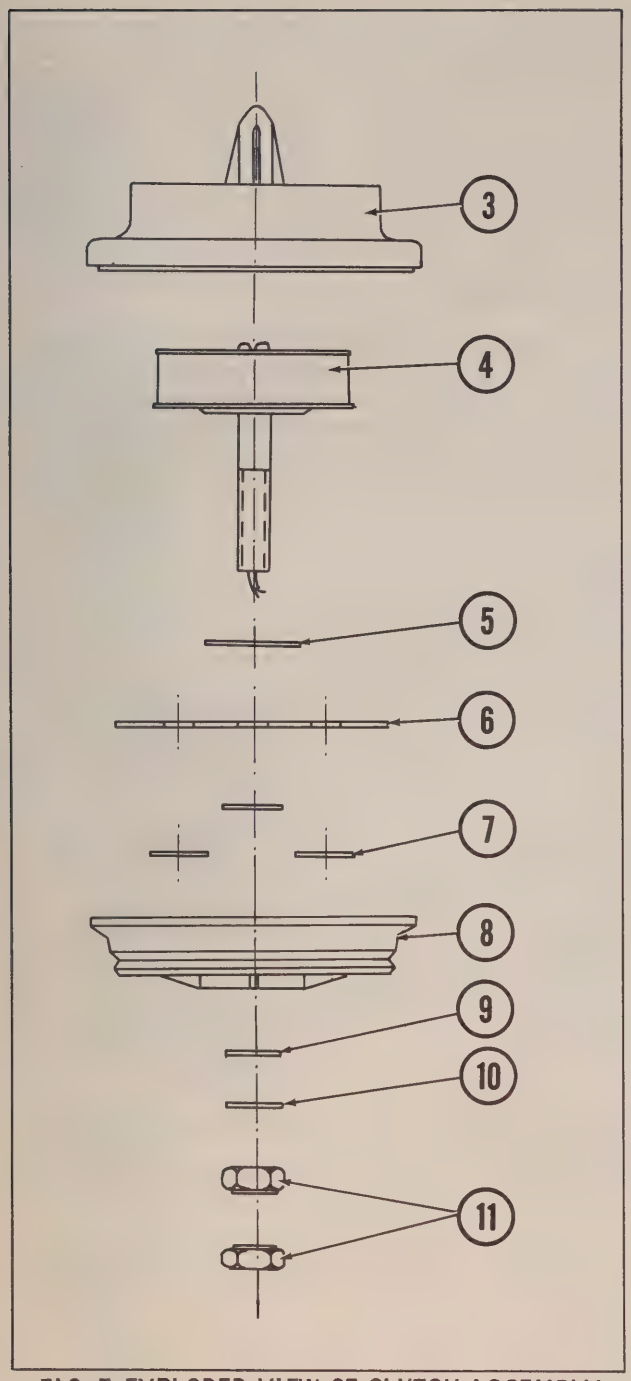


FIG. 7 EXPLODED VIEW OF CLUTCH ASSEMBLY

whether its felt insert just clears the top of clutch drive pulley (8). If it does, remove the top steel washer (leaving one washer on the shaft) and again rotate upper clutch spindle (3). The felt insert should now touch the top half of clutch drive pulley (8), causing a smooth friction.

5. To adjust for correct alignment, hold bottom hexagon nut and turn the shaft (with a screwdriver) clockwise to reduce the spacing and counterclockwise to increase the spacing between the clutch parts.

6. Make sure both clutch spindles are even with each other by holding a steel straightedge across their tops. Then tighten the lower hexagon nut and recheck as follows: Insert a 0.2-mm washer and check for sufficient friction between clutch drive pulley (8) and upper clutch spindle (3). Next insert a second steel washer. Upper clutch spindle (3) should just clear clutch drive pulley (8). Now remove both washers, replace upper clutch spindle (3) and the upper clutch spindle securing bracket (30), and resolder the two clutch coil leads.

Unidirectional Drive Pulleys

The maximum play of unidirectional pulleys (13) and (14) should not exceed 50°. The pulleys must not be subjected to any pressure. If the fault occurs in any part of a unidirectional drive pulley, replace the complete item.

Centrifugal Switch

When centrifugal switch (66) is in neutral, the middle contact is raised by the operating pin. The upper contacts should be deflected in this position by 0.3 mm or 1/64".

Recording/Playback Head

The bias current to each recording/playback head when recording is approximately 1 milliamp and may be measured by inserting a 200-ohm resistor in series with the chassis return lead of the head. The potential drop across this resistor should be 200 millivolts + 10%. If the current differs considerably from this figure, adjust C18 for Track II and C16 for Track I. The erase voltage to each head, measured with a VTVM, should be 125-150 volts.

With 5 millivolts at 1 kc fed into the diode socket and with the Recording Level control at maximum, a head current of 16 millivolts across a resistor of 200 ohms in the chassis return lead of the head should be obtained. Remove the EL95 oscillator tube for this test.

The positioning of the head assemblies is very critical and is particularly important for perfect reproduction of recordings made from a different recorder. Make the adjustment with a test tape or with a tape on which a frequency of 6 kc has been recorded. The recording/playback heads are plugged into the baseplate and attached to the chassis by two screws. By altering the settings of these two screws, the head may be correctly aligned. Check this alignment by connecting a VTVM into the high-impedance output socket and playing back the test tape. Then adjust the recorder until the VTVM shows maximum deflection. The heads can also be aligned horizontally so that the head gap just contacts the tape. When the tape crepe rubber pressure rollers (33) are moved away, the output should not vary by more than 2 db. When the tape is running in Track I, the top edge of the left-hand recording/playback head should be 0.1 mm above the top edge of the tape, and in Track II, the bottom edge of the right-hand recording/playback head should be about 0.1 mm below the bottom edge of the tape. The pole pieces of the corresponding erase heads should be level with the (top or bottom) edge of the tape. When the recorder is running, the tape should be guided within the guide posts in an absolutely straight line.

Hum Level

Adjust humdinger R5 for minimum hum level with the recorder switched to the straight amplifier position (depress both track buttons). Then adjust humbucking coil L3, under playback conditions on both tracks, for minimum hum. The level should not exceed 1/ 200th of 1 kc with a recording made at full modulation level on both tracks and at both speeds. This corresponds to a hum content of -46 db, and a compromise setting must be found so that the hum at either speed or track does not exceed this level.

Absorption Coil

Remove oscillator EL95 and switch to Record. Connect a signal generator, set at 15 kc, to the diode input. Connect a VTVM to the high-impedance output socket and adjust the signal generator output for a convenient reading on the VTVM. With the two-speed switch at 7 1/ 2 ips, adjust the core of absorption coil L2 for maximum deflection on the VTVM. Now reduce the audio frequency to 9 kc and set the two-speed switch to 3 3/ 4 ips. Note the reading on the VTVM and slightly sweep the signal frequency above and below 9 kc, observing whether the peak is indicated with a signal of 9 kc $\pm$ 300 cps. If not, repeat the procedure, this time with the frequency just above 15 kc and fed to the diode input at 7 1/ 2 ips.

Head Assemblies

After the recorder has been used for a while, the heads should be inspected, and any dirt or iron oxide should be carefully removed. Removal is best done with a match or orange stick and, perhaps, with methylated spirits. Never use carbon tetrachloride or any acetone fluid; these will damage the plastic casing of the heads.

TROUBLE CHART

Symptom	Cause	Remedy
Tape does not move in Record or Playback, but motor runs.	1. Tape not threaded properly.	1. Thread tape properly (see "Threading the Tape" under "Operating Instructions").
	2. Pressure slider (28) jamming.	2. Adjust and/ or lubricate pressure slider (28).
	3. Faulty pressure solenoid (27) or related circuit.	3. Check and repair.
Recorder does not run at correct speed when recording or playing back.	1. Too much friction on supply reel.	1. See "Electromagnetic Clutches" under "Adjustments."
	2. Tape jams in tape guides.	2. Realign sound channel.
	3. Pressure roller (34) jamming.	3. Clean and lubricate shaft.
	4. Tape counter (18) jamming.	4. Check tape counter (18) and drive belt (17), and replace, if necessary.
	5. Faulty motor.	5. Replace motor.
	6. Tape not threaded properly.	6. Thread tape properly (see "Threading the Tape" under "Operating Instructions").
Tape runs sluggishly when starting.	1. Faulty centrifugal switch (66).	1. Check push rod in motor spindle; clean and lubricate, if necessary.
	2. Spring set assembly (67) of centrifugal switch (66) not closing in running position.	2. Adjust.
Tape runs slowly in either Fast Wind position.	1. Faulty centrifugal switch (66).	1. Check push rod in motor spindle; clean and lubricate, if necessary.

Symptom	Cause	Remedy
	2. Spring set assembly (67) of centrifugal switch (66) closing in running position.	2. Adjust.
No fast wind.	1. Clutches improperly adjusted.	1. See "Electromagnetic Clutches" under "Adjustments."
	2. Clutching coil (4) defective.	2. Replace clutching coil (4).
	3. Clutching coil (4) not being energized.	3. Check circuit.
Head assemblies wear too quickly.	1. Crepe rubber pressure roller (33) improperly adjusted.	1. Adjust crepe rubber pressure roller (33).
Tape jumps from tape guides.	1. Pressure roller (34) and capstan spindle not parallel.	1. Adjust shaft of pressure roller (34), or replace.
	2. Dirt or iron oxide on pressure roller (34) or on capstan spindle.	2. Clean and polish pressure roller (34) or capstan spindle.
	3. Sound channel not correctly adjusted.	3. Adjust tape guides.
Tape scrapes against edge of reel.	1. Reel warped.	1. Replace reel.
	2. Tape guides out of alignment.	2. Realign tape guides.
	3. Clutches improperly adjusted.	3. See "Electromagnetic Clutches" under "Adjustments."
No fast wind.	1. Clutches improperly adjusted.	1. See "Electromagnetic Clutches" under "Adjustments."
	2. Clutching coil (4) defective.	2. Replace clutching coil (4).
	3. Clutching coil (4) not being energized.	3. Check circuit.
Head assemblies wear too quickly.	1. Crepe rubber pressure roller (33) improperly adjusted.	1. Adjust crepe rubber pressure roller (33).
Tape jumps from tape guides.	1. Pressure roller (34) and capstan spindle not parallel.	1. Adjust shaft of pressure roller (34), or replace.
	2. Dirt or iron oxide on pressure roller (34) or on capstan spindle.	2. Clean and polish pressure roller (34) or capstan spindle.
	3. Sound channel not correctly adjusted.	3. Adjust tape guides.
Tape scrapes against edge of reel.	1. Reel warped.	1. Replace reel.
	2. Tape guides out of alignment.	2. Realign tape guides.

Symptom	Cause	Remedy
	3. Clutches improperly adjusted.	3. See "Electromagnetic Clutches" under "Adjustments".
Safety button jamming.	1. Burr on locking bar of Safety button.	1. Clean bar.
	2. Tape deck not correctly aligned.	2. Remove deck and adjust location of push-button assembly (51) (unscrew two screws in front of cast top frame).
Right-hand reel spindle sluggish when starting.	1. Too much friction from tape counter (18).	1. Replace tape counter(18).
	2. Too much friction from reel spindle on shaft. (This also applies to left-hand reel spindle).	2. Clean and lubricate shaft.
Distorted recording; low volume due to no recording bias.	1. Faulty bias oscillator tube EL95 or oscillator coil.	1. Check and replace.
	2. Faulty recording head.	2. Replace both recording heads.
No erase.	1. Faulty bias oscillator.	1. Check and replace.
	2. Faulty erasing head (21).	2. Replace erasing head (21).
Cross talk from other channel.	1. Recording head or erase head gap not correctly adjusted; tape not guided horizontally.	1. See "Recording/ Playback Head" under "Adjustments." Adjust tape guides. Make sure that tape runs freely in all four tape guides.
Recording and erase heads cannot be adjusted to an exact vertical position.	1. Dirt or foreign matter under heads.	1. Clean heads.
Wow and flutter.	1. Jerky clutches.	1. Check clutch adjustment.
	2. Tape scratches against screening hoods of record/ playback heads.	2. Adjust screening hoods.
	3. Tape not guided horizontally.	3. Check and adjust.
	4. Too much pull from take-up reel.	4. See "Electromagnetic Clutches" under "Adjustments".
Hum level too high.	1. Hum-bucking coil L3 not adjusted.	1. Readjust; see "Hum Level" under "Adjustments".
	2. Humdinger R5 not adjusted.	2. Readjust; see "Hum Level" under "Adjustments".
	3. Heater-to-cathode short in EF86 (V1).	3. Replace EF86.

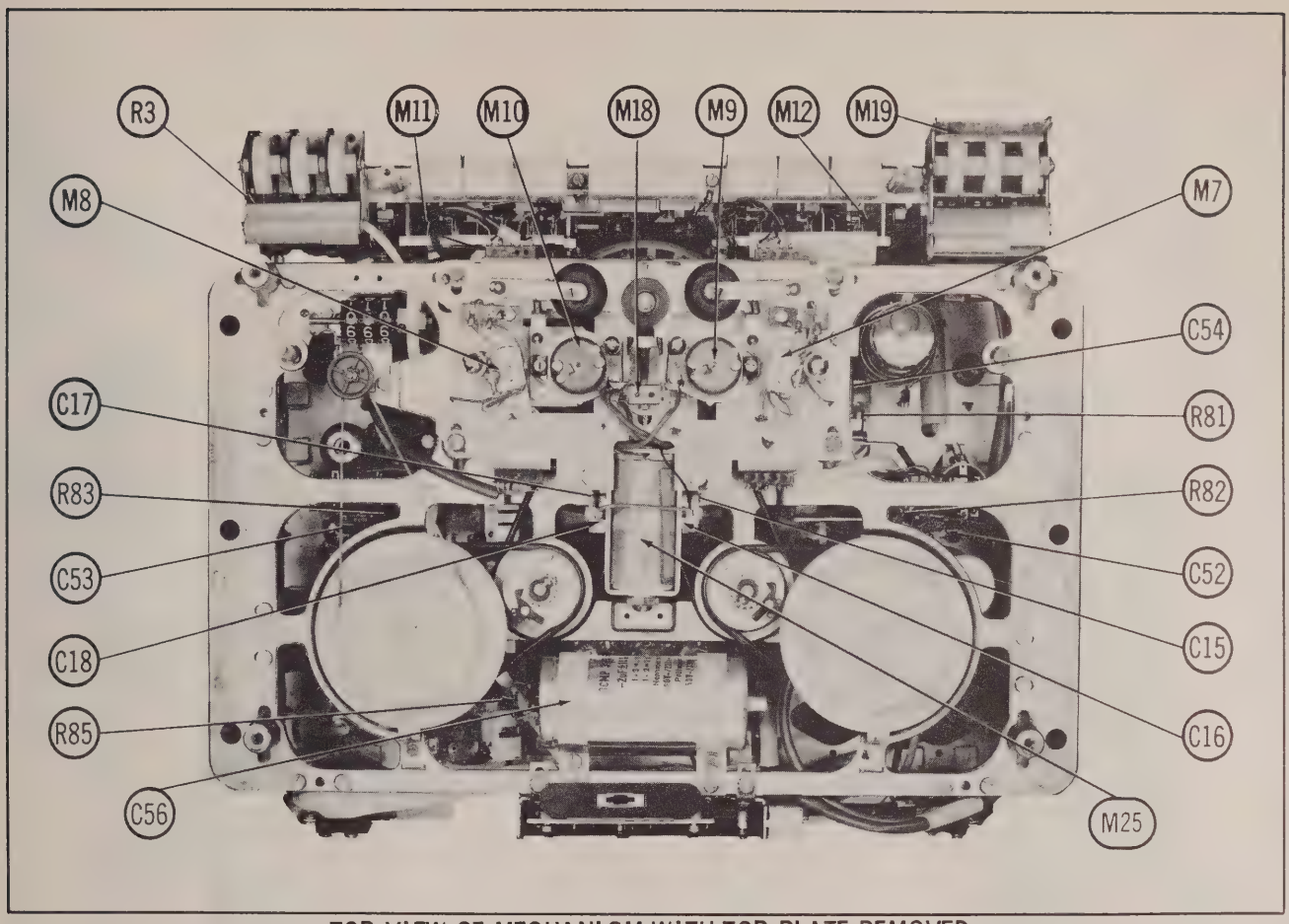
TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
	4. Faulty ECC81.	4. Replace ECC81.
	5. Faulty recording/ playback head.	5. Replace both heads.
Low gain.	1. Faulty recording bias.	1. Adjust C16, C18, R4.
	2. Bias oscillator does not oscillate.	2. Change oscillator tube EL95.
	3. Faulty recording head.	3. Replace both heads.
	4. Faulty output transformer, T2.	4. Replace output transformer, T2.
	5. Low B+.	5. Check rectifier.
No playback.	1. Faulty switching.	1. Adjust.
	2. Bias oscillator oscillates in playback position.	2. Correct switching.
Cuts off at 5,000 cps in 3 3/4 ips position.	1. Absorption coil L2 improperly adjusted.	1. See "Absorption Coil" under "Adjustments".
	2. Recording made with gap of recording head in different position.	2. Realign head.
	3. Worn head.	3. Replace both heads.
	4. Dirty head.	4. Clean head.
Too much treble response on playback,	1. Absorption coil L2 improperly adjusted.	1. See "Absorption Coil" under "Adjustments."
High background noise on erased tape.	1. Tape guides or heads magnetized.	1. Demagnetize tape guides or heads.
Crackle in playback position when motor is running.	1. Lead touches rotating cage motor.	1. Correct.
Hum when recording from microphone.	1. Stray AC fields.	1. Correct.

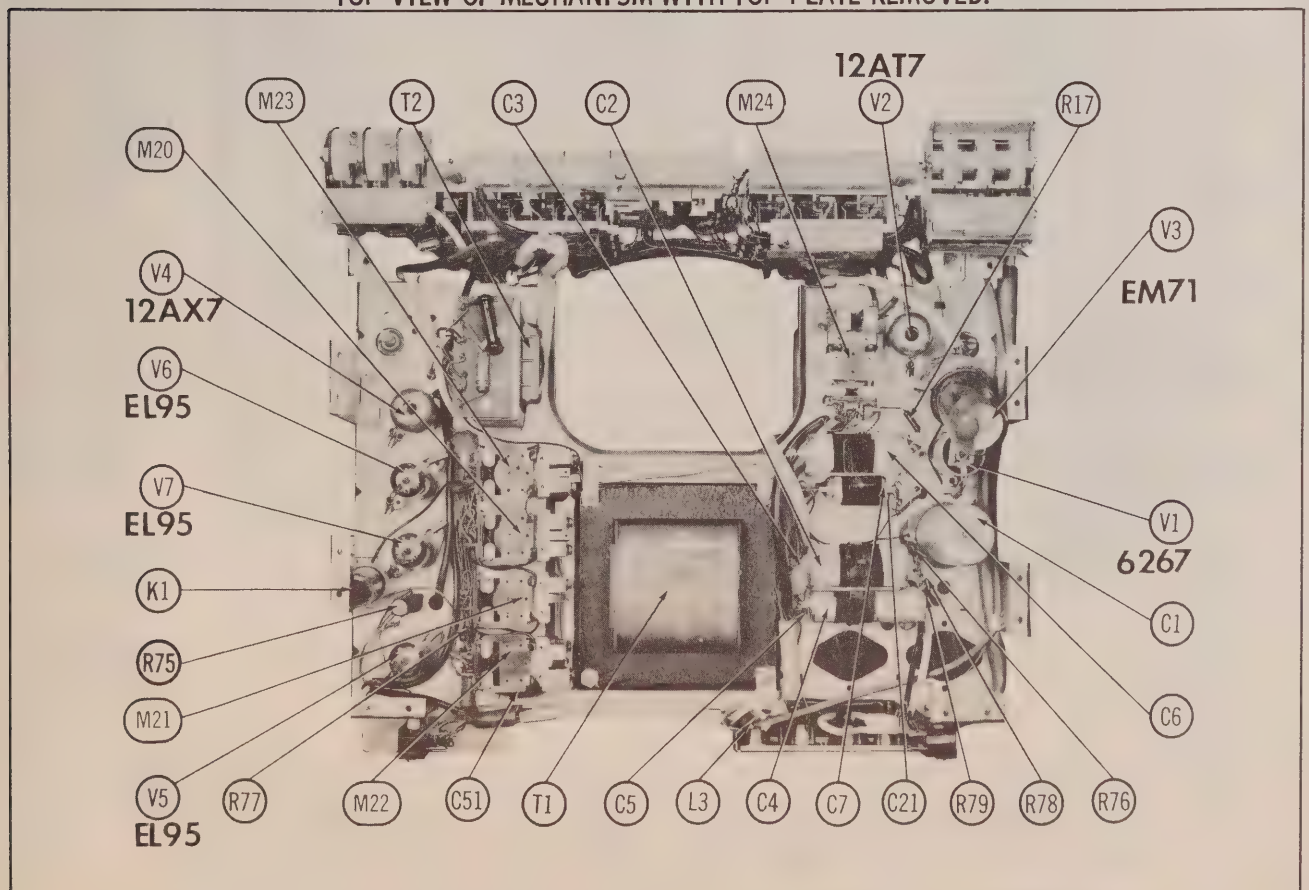
MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	5024-004	Cast Top Frame
2	0279-284	Complete Clutch
3	0279-285	Upper Clutch Spindle
4	5021-051	Complete Clutching Coil
5	9604-319	Plastic Washer (Simrit White) 26 x 8.2 x 0.2
6	0279-296	Clutching Disc
7	9604-321	Plastic Washer (Simrit White) 15 x 6.1 x 0.3
8	0279-293	Clutch Drive Pulley
9	9604-726	Steel Washer 15 x 8.2 x0.2
10	9604-320	Plastic Washer (Simrit) 15 x 8.2 x 0.5
11	0279-303	Locking Nut (2)
12	7882-006	Complete Motor 50/60 cps
13	0354-031	Uni-directional Drive Pulley (Left Locking)
14	0354-034	Uni-directional Drive Pulley (Right Locking)
15	0354-330	Drive Belt (Motor-Uni-directional Drive Pulley) (2)
16	0354-331	Drive Belt (Uni-directional Drive Pulley Clutch) (2)
17		Drive Belt For Tape Counter
18	5021-018	Tape Counter
19	0628-124	Outer Tape Guide Post (2)
20	7485-512	Bracket For Erasing Head (2)
21	7489-008	Erasing Head (2)
22	7485-533	Left Hand Base Assembly For Rec./Rep. Head
23	7489-001	Rec./Rep. Head (2)
24	0279-048	Inner Tape Guide Post (2)
25	9619-518	Compression Spring For Inner Tape Guide Post
26	7485-537	Right Hand Base Assembly For Rec./Rep. Head
27	7485-560	Complete Pressure Solenoid
28	7485-563	Complete Slider With Lifting Post For Pressure Roller
29	7485-514	Spring Clamp
30		Upper Clutch Spindle Securing Bracket
31	7485-516	Extension Spring (2)
32	7485-564	Compression Spring (2)
33	0607-050	Complete Crepe Rubber Pressure Roller With Fittings (2)
34	0279-044	Pressure Roller
35	5021-080	Complete Two-Speed Selector
36	0354-271	Rubber Buffers (6)
37	0279-210	Washers For 36 (6)
38	5021-039	Complete Top Deck With English Descriptions
39	5016-044	Plastic Head Cover
40	9628-220	Grundig Emblem
41	5021-037	Operating Indicator Plate With English Descriptions
42	0354-006	Scale For Recorder Level Control
43	0607-061	Two-Speed Indicator Plate English
44	5016-047	Perspex Window For Tape Counter
45	5021-032	Perspex Window For Input Selector

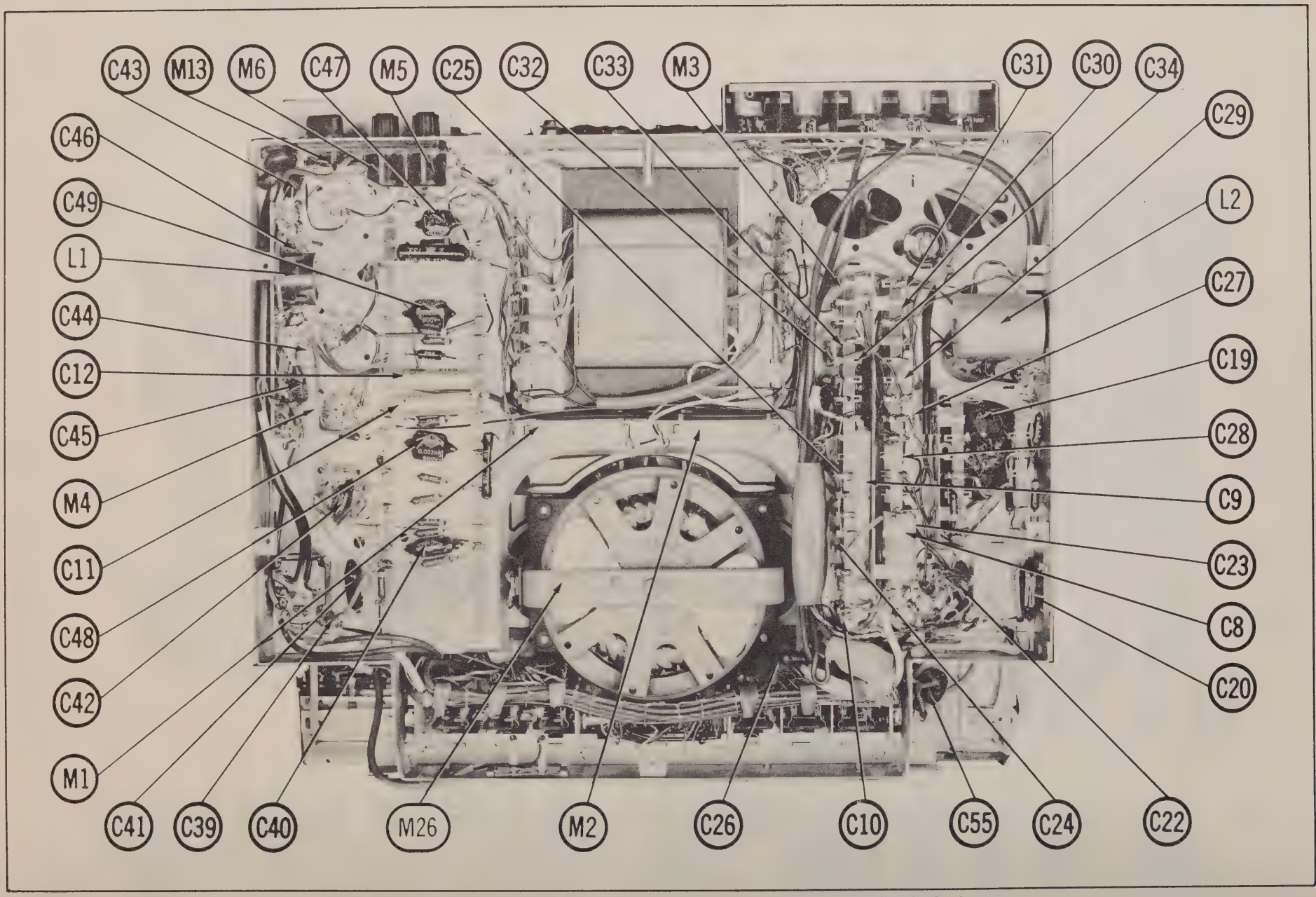
Ref. No.	Part No.	Description
46		Tone Control
47	5021-036	Scale For Volume Control
48	5016-051	Complete Plastic Sound Channel Cover
49	5016-052	Golden Finished Insert For (48)
50	5016-053	Clover Emblem
51	7482-002	Push Button Assembly
52	7482-511	Medium Operating Slide For Stop Bar
53	7482-507	Operating Slide (3)
54	7482-508	Operating Slide (3)
55	7482-513	Small Operating Slide (Left Hand)
56	7482-515	Small Operating Slide (Right Hand)
57	7482-536	Compression Spring (9)
58	7482-537	Extension Spring (3)
59	7482-567	Spring Set Ass'y. (With Contacts e 1-2-3)
60	7482-544	Spring Set Ass'y. For Stop With Contacts
61	7482-557	Spring Set Ass'y. For Cut Off Speaker, And Erase Current With Contact t 1-2-3
62	7482-561	Left Hand Switch Bank Ass'y.
63	7482-562	Right Hand Switch Bank Ass'y.
64	0279-044	Five Pin Plug (4)
65	0354-079	Shaft For Extension Piece (2)
66	5024-039	Centrifugal Switch
67	5024-040	Spring Set Ass'y. For Centrifugal Switch
68	7481-007	Hi-Fi Multisonic Tone Control
69	7481-009	Input Selector
70	7482-539	Stop Bar
71	7482-538	Press Button (6)
72	7482-540	Recording Safety And Temp. Stop Button (Red)
73	7482-541	Trick And Speaker On-Off Button (Black)
74	7485-004	Complete Sound Channel Ass'y.
75	5021-082	Spring Set Ass'y. For Two Speed Selector
76	0351-013	Complete Extension Piece
77	0810-018	6-Way Plug With Guide Pins
78	0810-019	6-Way Jack
79	0810-022	5-Way Plug
80	0810-023	5-Way Jack
81	9631-308	Wire Guard
82		Line Cord
83	0279-234	Voltage Tapping Plug
84	7689-010	Voltage Selector
85	0279-226	Screw Plug For Fuse
86	9625-621	Complete Hi Fi Panorama Speaker Socket
87	0154-017	Complete Ground Socket
88	5844	3-Way Jacks (4)
89	5021-030	Complete Back Socket
90		Speaker Jack
91	7482-526	Complete Switching Slide Short
92	7482-524	Complete Switching Slide Long
93	7482-522	Complete Locking Slide Lower
94	5016-058	Two Speed Selector Knob
95	0809-014	Control Knobs (2)
96	0600-098	Screening Hood (2)
97		Remote Control Socket



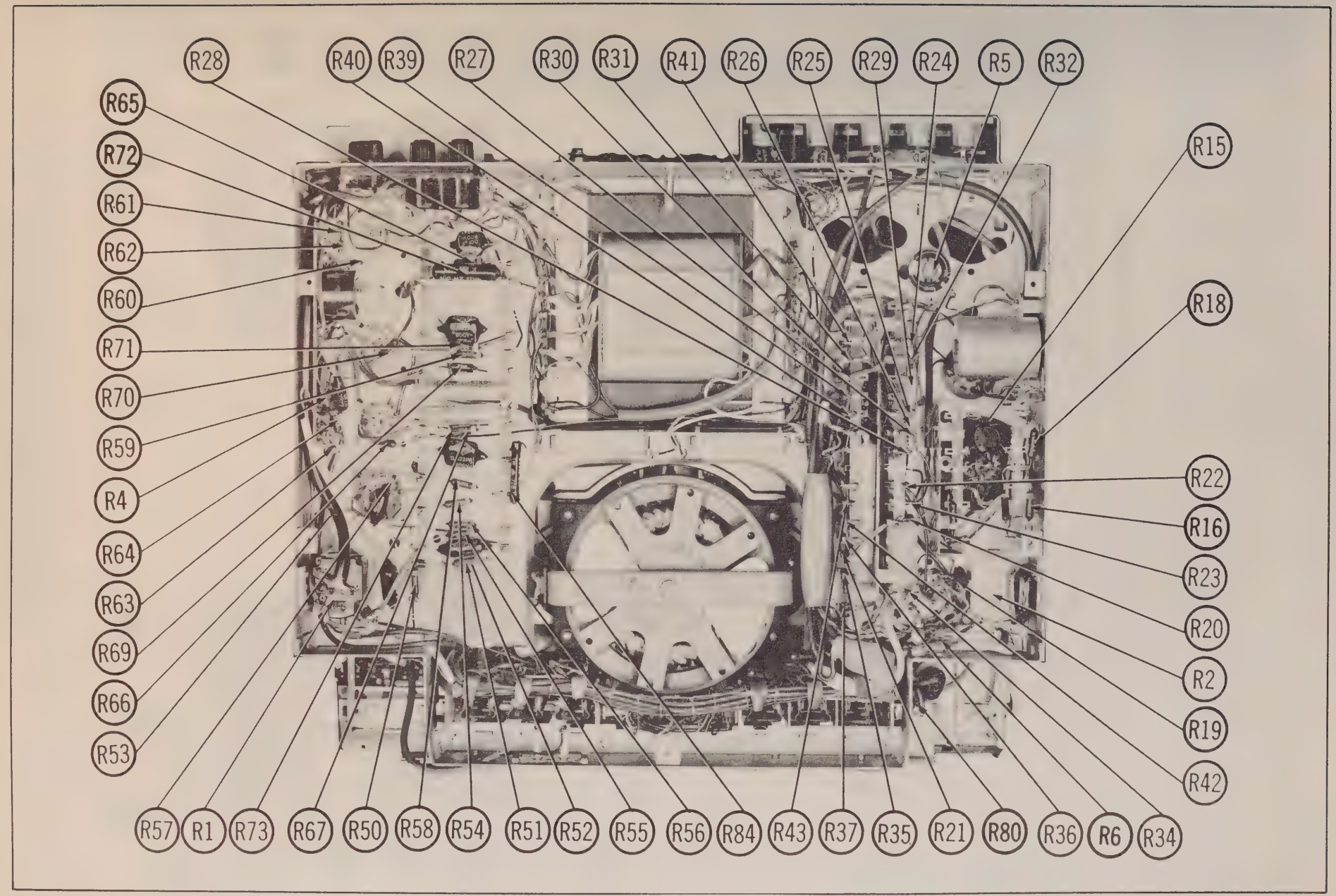
TOP VIEW OF MECHANISM WITH TOP PLATE REMOVED.



TOP VIEW OF MECHANISM WITH TOP PLATE & FRAME ASS'Y. REMOVED



ELECTRICAL CHASSIS BOTTOM VIEW - CAPACITOR, INDUCTOR & MISC. IDENT.



ELECTRICAL CHASSIS BOTTOM VIEW - RESISTOR IDENT.

GRUNDIG MAJESTIC MODELS
TK830, TK830E, TK830U

FOLDER 5

Adjustment of Head Currents

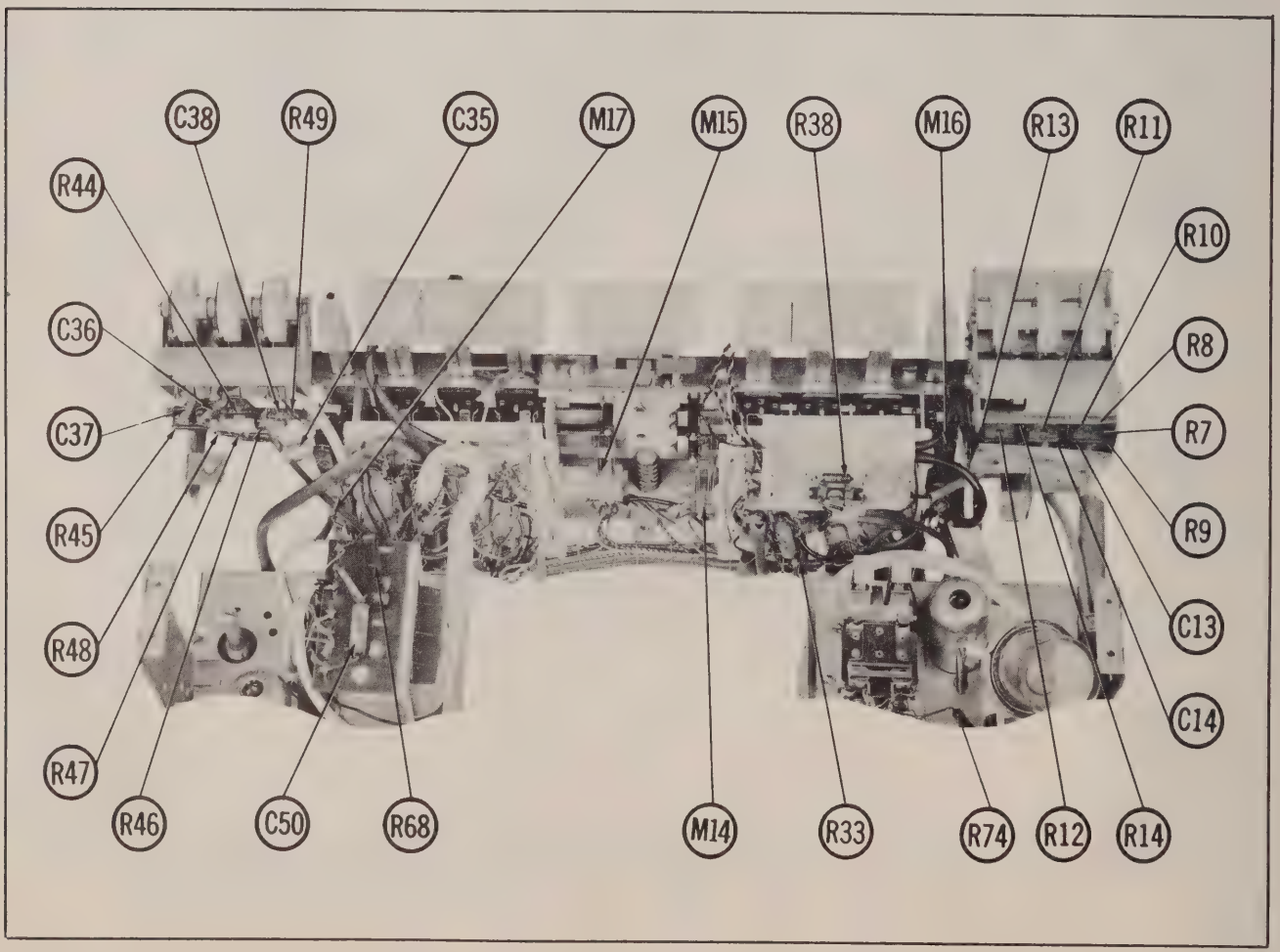
The Bias Current to each of the Recording/ Playback Heads is approximately 1MA when recording. This current may be measured by placing a 200Ω resistor in series with the chassis return lead of each head and measuring the voltage drop across the resistor. The voltage drop across the resistor should be .2 ± 10%. If the Voltage differs considerably from this figure, adjust C18 for track number II and C16 for track number I. The Erase Voltage across each head should be between 125 and 150 volts measured with a VTVM. With the oscillator tube (V5) removed from its socket and the recording level set at maximum, a 1KC signal at 5 millivolts fed to the Diode Socket should provide a voltage of 16 millivolts across the 200 ohm test resistors. Remove resistors after adjustments. Replace V5 in its socket.

Modulation Level Adjustments

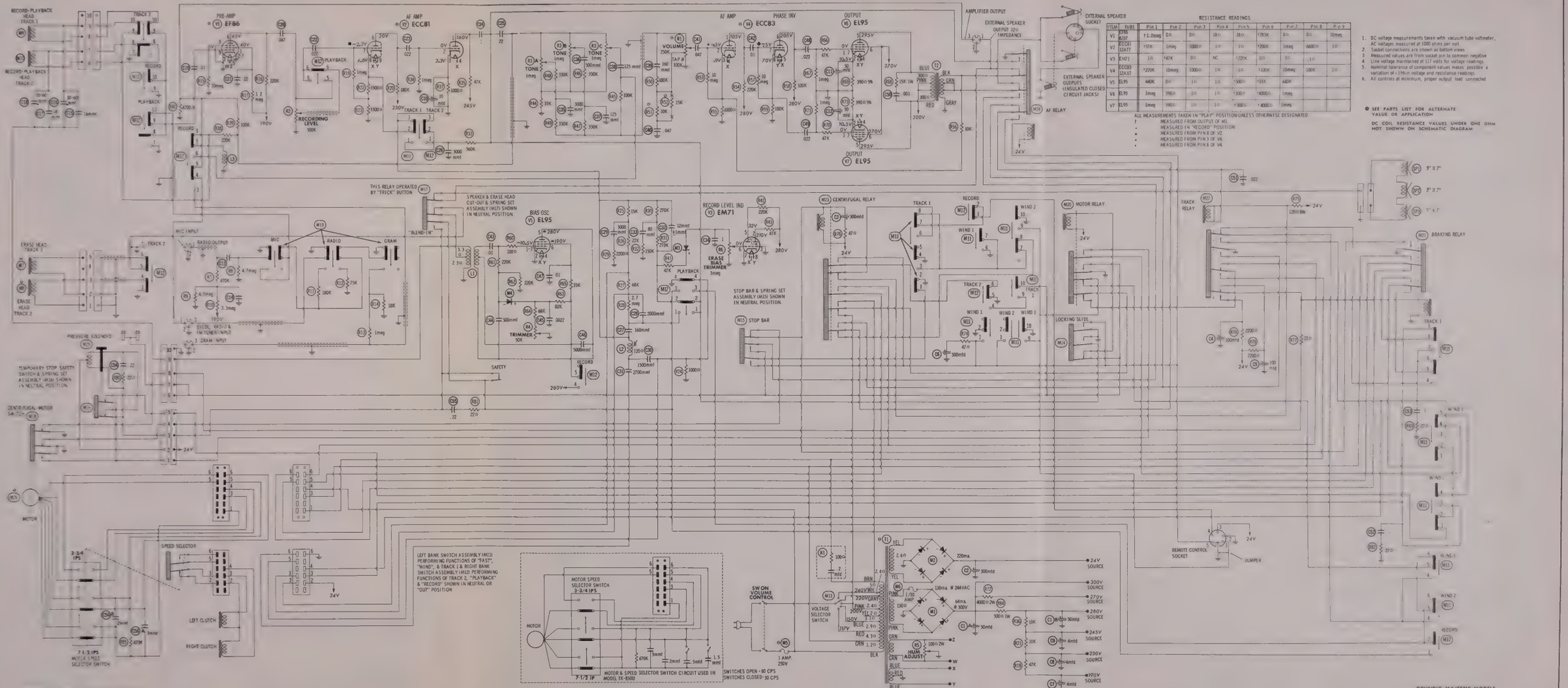
Feed a 1KC signal at a level of 20 millivolt into the Diode Input and adjust the Recording Level Control until the two halves of the Indicator Tube (V3) just begin to touch. Record and measure the third harmonic distortion content on playback by means of a Distortion meter. The reading obtained should be 4% ± 1% with a maximum difference of 2% between track I and II. If the reading is more than 5%, R6 should be adjusted to close the eye at a lower setting of the Recording Level Control. The Indicator Tube should be opened up by adjusting R6 if the reading obtained is lower than 3%.

Absorption Coil Adjustment

Remove the Oscillator tube (V5) and switch to "Record". Connect an Audio Oscillator to the Diode Input and set for 15KC. Connect a VTVM to the high impedance output socket and adjust the audio oscillator output for a convenient reading on the VTVM. With the two speed switch set to 7½ ips, adjust the absorption coil L2 for maximum deflection on the VTVM. Reduce the audio frequency to 9KC and switch speed to 3 2/3 ips. Note the reading on the VTVM and slightly rotate the frequency above and below 9KC noting whether the peak is indicated with a signal of 9KC ± 300 cps. If not, the procedure should be repeated, this time with the frequency just above or below 15KC fed to the Diode Input at 7½ ips.



BACK VIEW OF FRONT SWITCH ASSEMBLY



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF86 6267	1.2meg	0Ω	0Ω	18Ω	18Ω	1.25K	0Ω	0Ω	10meg
V2	ECC81 12AT7	150K	1meg	1000Ω	1Ω	1Ω	200K	1meg	660Ω	1Ω
V3	EM71	1Ω	147K	0Ω	NC	120K	0Ω	0Ω	1Ω	
V4	ECC83 12AX7	220K	10meg	1000Ω	1Ω	1Ω	100K	10meg	100K	1Ω
V5	EL95	440K	0Ω	1Ω	1Ω	500Ω	93K	440K		
V6	EL95	1meg	390Ω	1Ω	1Ω	500Ω	4000Ω	1meg		
V7	EL95	1meg	390Ω	1Ω	1Ω	500Ω	4000Ω	1meg		

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED
! MEASURED FROM OUTPUT OF M1.
- MEASURED IN "RECORD" POSITION
• MEASURED FROM PIN 8 OF V2.
• MEASURED FROM PIN 3 OF V4.
• MEASURED FROM PIN 8 OF V4.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. AC voltages measured at 1000 ohms per volt.
3. Socket connections are shown as bottom views.
4. Measured values are from socket pin to common negative.
5. Line voltage maintained at 117 volts for voltage readings.
6. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
7. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

GRUNDIG MAJESTIC MODELS
TK830, TK830E, TK830U

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ELECT. PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Preamp.	EF86/6267 ①
V2	AF Amplifier	ECC81/12AT7 ①
V3	Record Level Indicator	EM71
V4	AF Amp-Phase Inv.	ECC83/12AX7 ①
V5	Bias Osc.	EL95
V6	Output	EL95
V7	Output	EL95

① Domestic type listed may not be directly interchangeable in some instances.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	385			BR5045				TVLS-2646*
B	50	385			BR5045				
C2	300	35		PRS50V250	BR2505		TD-250-50		TVAS-1225*
C3	300	35		PRS50V250	BR2505		TD-250-50		TVAS-1225*
C4	100	40		PRS50V100	BR1005	TC3501	TD-100-50	MTH-5010	TVA-1310
C5	100	40		PRS50V100	BR1005	TC3501	TD-100-50	MTH-5010	TVA-1310
C6	300	35		PRS50V250	BR2505		TD-250-50		TVAS-1225*
C7	4	385		PRS450V4	BR445		TD-4-450	MT-4504	TVAS-1643*
C8	4	385		PRS450V4	BR445		TD-4-450	MT-4504	TVAS-1643*
C9	4	385		PRS450V4	BR445		TD-4-450	MT-4504	TVAS-1643*
C10	10	15		SRE25V10	BBR10-25	TT15X10	ML10-15	MQ-0510	TVA-1204
C11	50	15		SRE25V50	BBR50-25	TT15X50	ML50-15	MQ-0150	TE-1160
C12	50	15		SRE25V50	BBR50-25	TT15X50	ML50-15	MQ-0150	TE-1160

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C13	10000			SI 10000	D6-103	LT6S1	B-110	5HK-S1	
C14	.1	250		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C15	16								
C16	10-60								
C17	16								
C18	10-60								
C19	.01	125		P288N-01	D6-103	CUB2S1	GEM-411	2TM-S1	
C20	.047	500		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C21	.22	500		P688N-22		CUB6P22	GEM-6022	6TM-P22	
C22	.022	250		P488N-022		CUB4S22	GEM-6122	4TM-S22	
C23	.022	500		P688N-022		CUB6S22	GEM-6122	6TM-S22	
C24	.1	500		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C25	.22	125		P288N-22		CUB2P22	GEM-2022	2TM-P22	
C26	3000			1467-003	DD-302	1W5D3	MC461	1FM-23	
C27	160			1468-00016		5W5T16			

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C28	2000			1467-002	DD-202	1W5D2	MC477	1FM-22	
C29	3000			1467-003	DD-302	1W5D3	MC461	1FM-23	
C30	1500			1467-0015	DD-152	1W5D15	MC256	1FM-215	
C31	2700			1467-0027	DD-272	1W5D27		1FM-227	
C32	12			1469-000012	TCZ-12	22R5Q12		MS-412	± 1mmf
C33	80								
C34	.1	125		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C35	3000			1467-003	DD-302	1W5D3	MC461	1FM-23	
C36	500			1468-0005	DD-501	5W5T5	MC245	1FM-35	
C37	125								
C38	125								
C39	160			1468-00016		5W5T16			
C40	.047	125		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C41	.047	125		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C42	.01	500		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C43	.01	500		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C44	500			1468-0005	DD-501	5W5T5	MC245	1FM-35	
C45	.0022	250		P488N-0022	D6-222	CUB6D22	GEM-6222	6TM-D22	
C46	5000			1467-005	DD-502	1W5D5	MC465	1FM-25	
C47	.01	500		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C48	.022	500		P688N-022		CUB6S22	GEM-6122	6TM-S22	
C49	.022	500		P688N-022		CUB6S22	GEM-6122	6TM-S22	
C50	.001	500		P688N-001	D6-102	CUB6D1	GEM-621	6TM-D1	
C51	.022	125		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C52	.1	125		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	Note 1
C53	.1	125		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C54	.22	125		P288N-22		CUB2P22	GEM-2022	2TM-P22	
C55	.22	125		P288N-22		CUB2P22	GEM-2022	2TM-P22	
C56A	3	500							
B	2	500							

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Grundig Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K	½		BT-53 †	A47F1-250K	Q13-130X	U46	Volume, Tap ⓐ 100K Note 1
B	Shaft			Not Req.	KSS-3	PQ †	Not Req.	
C	Switch			KB-2 or KR-2*	SWE-20	76-2	US-27	
R2A	500K	½	5021-015	B-60 †	A47-500K-Z	Q13-133	U48	Recording Level
B	Shaft			Not Req.	KSS-3	PQ †	Not Req.	
R3A	1meg	1/4	7481-007					Tone
B	1meg	1/4						Tone
C	1meg	1/4						Tone
R4A	50K	1/4		AB-31 ♦	A47-50K-S ♦	Q11-123 ♦	U35 ♦	Trimmer
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	
R5A	100Ω	2(WW)	1532	WN-101 ▲	A43-100 ■	W11-084 ▲	R100L ▲	Hum Adjust
B	Shaft			Not Req.	FKS-1/4	SK5	Not Req.	
R6	3meg	1/4						Erase Bias Trimmer

* Use KR-2 with CRL "Red Label" controls and KB-2 with "Blue Label" controls.
† Saw off shaft and add slot as required.
♦ Enlarge mounting hole to 3/8".
▲ To use standard bushing type control, relocate filter bank on top of chassis and enlarge mounting hole to 3/8".
Note 1. A 650K control may be used in some versions (Part #5021-016).

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Grundig Majestic PART No.	NOTES
R7	470K			
R8	4.7meg			
R9	4.7meg			
R10	3.3meg			
R11	180K			
R12	75K			
R13	1meg			
R14	18K			
R15	10meg			
R16	220K			
R17	1.2meg			
R18	47K			
R19	1meg			
R20	180K			
R21	10K			
R22	3300Ω			
R23	3300Ω			
R24	1000Ω			
R25	15K			
R26	22K			
R27	68K			
R28	2.7meg			
R29	2200Ω			
R30	270K			
R31	270K			
R32	150K			
R33	560K			
R34	1meg			
R35	47K			
R36	10K			
R37	1000Ω			
R38	220K			
R39	100K			
R40	4700Ω			
R41	47K			
R42	220K			
R43	47K			
R44	33K			
R45	100K			
R46	330K			
R47	330K			
R48	330K			
R49	330K			
R50	100K			
R51	10K			Note 1
R52	15K			Note 1
R53	10meg			
R54	220K			
R55	1000Ω			
R56	10K			
R57	10meg			
R58	100K			
R59	100K			
R60	100Ω			
R61	220K			
R62	220K			
R63	82K			
R64	68K			
R65	33K			
R66	47K			
R67	1meg			
R68	15K	1		
R69	390Ω 5%			
R70	47K			
R71	1meg			
R72	4000Ω	2		
R73	390Ω 5%			
R74	47Ω			
R75	120Ω	8		
R76	47Ω			
R77	22Ω			
R78	2200Ω			
R79	2200Ω			
R80	22Ω			
R81	22Ω			
R82	22Ω			
R83	22Ω			
R84	500Ω	1		
R85	470K			

Note 1. Some versions may use a 5600Ω resistor to replace R51 & R52.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Grundig Majestic PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	9281-006					
L2	Trap Coil	9281-003					
L3	Hum Pickup Coil	9281-026					

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA Grundig Majestic PART No.	QUAM PART No.	NOTES
SP1	5" x 7"	PM	3-4Ω	0459/19		
SP2	5" x 7"	PM	3-4Ω	0459/19		
SP3	5" x 7"	PM	3-4Ω	0459/19		

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	SEC. 4	REPLACEMENT DATA Grundig Majestic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	260V Tap ⓐ 240V, 220V, 200V, 185V, 150V, 117V, ⓐ 95A, 35V.	240V ⓐ .138A	24V ⓐ .44A	6.3 VCT ⓐ 2A	6.3V ⓐ .2A	9008-507 ① 9008-506 ② 9008-503 ③						

① Used in 60Ω Models ② 50/60∿ Part No. ③ 50∿ Part No.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA Grundig Majestic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4400Ω	8Ω	9060-501	Z1011 ①	A-2901 ①	AU-609①	A-3870 ①	24S61 ①	S-55X ①	① Drill new mounting hole
	PRI. 2	SEC. 2								
	4400Ω	3.4Ω								

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Grundig Majestic PART No.	REPLACEMENT DATA
K1	Motor Reversing Network	.2mfd 100Ω		

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Grundig Majestic PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.064A	B250C100				
M2	.220A	B30C600				
M3		E25C5				
M4		E150C2		U25HFP		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Grundig Majestic PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M5		1A 250V*		0279-226				
M6		1/10A 250V						

* Some versions may use 1 1/4A fuse in this application, 200-240V line source uses .8A or 1A.

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	Grundig Majestic PART No.	NOTES
M7	Erase Head	7489-008/011	
M8	Erase Head	7489-008/011	
M9	Record-Playback Head	7489-001	
M10	Record-Playback Head	7489-001	
M11	Switch	7482-561	Left Bank Assembly, Fast Rewind
M12	Switch	7482-562	Right Bank Assembly, Playback, Record
M13	Switch	7689-010	Voltage Selector And Plug #0279-234
M14	Switch	7482-567	Spring Set Assembly With Contacts
M15	Switch	7482-544	Spring Set Assembly For Stop With Contacts
M16	Switch	7482-545	Spring Set Assembly, Pressure Magnet Cut Off
M17	Switch	7482-557	Spring Set Assembly, Speaker And Erase Head Cut Off
M18	Switch	5024-039	Centrifugal
M19	Switch Ass'y.		Input (Mic, Radio, Gram)
M20	Relay	7680-012	Motor
M21	Relay	7680-027	Braking
M22	Relay	7680-011	Track
M23	Relay	7680-026	Centrifugal
M24	Relay	7680-022	Signal Control
M25	Solenoid	9281-015	Pressure Magnet
M26	Motor	7882-006	50-60 Cycle, Complete
	Motor	7882-001	50 Cycle, Complete
	Tape Counter	5021-018	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

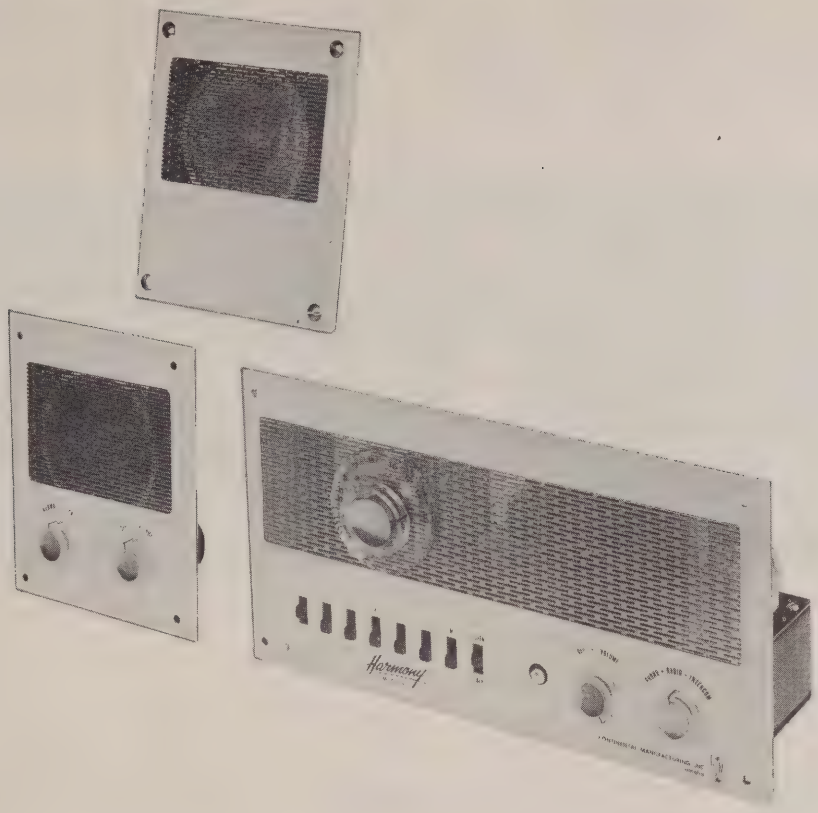
NAME	PART NO.	DESCRIPTION
Knob	5016-058	Two Speed Selector
Knob	0809-014	Control (2 Used)
Button	7482-002	Press Block
Press Button	7482-538	6 Used
Stop Button	7482-540	Red, Recording Safety And Temperature Stop
Button	7482-541	Black, Trick And Speaker On-Off
Head Cover	5016-044	
Cover	5016-050	Complete, Sound Channel
Cover Plate	7682-513	
Scale	0354-006	Recording Level Control
Scale	5021-036	Volume Control
Indication Plate	0607-061	Two Speed, English
Window	5016-047	Tape Counter
Window	5021-032	Input Selector
Window	5021-035	Tone Control
Handle	0630-087	Complete
Case	7682-001	Complete

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder



HARMONY
MODEL 32

HARMONY
MODEL 32

TRADE NAME	Harmony Model 32
MANUFACTURER	Continental Manufacturing, Inc., 1612 California St., Omaha, Nebraska
TYPE SET	AC-DC Operated AM Receiver And Intercommunications Unit
TUBES	Five
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 23 Watts, .25 Amp @117 Volts AC
TUNING RANGE—BROADCAST	535 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1, A2, A3, A4, A6..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A7..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	"	"	1600KC	1600KC	"	A5	"
3.		Loop	1400KC	Tune for 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune for 600KC signal	"	A7	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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H890

SET 434 FOLDER 6

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	AF Amplifier	12AU6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	HARMONY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	150	①		BBRQ55515C			Q-006	R2747*
B	50	150							
C	30	150							
D	25	25							
C2	25	25		PRS25V25	BBR25-25	TC36	TD-25-25	MT-0225	TVA-1205

* Not normally in distributors stock. Available thru distributor on order to manufacturer.
① C1A is not used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	HARMONY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	100			BPD-0001	DD-101	L10T1	CN0-310	5GA-T1	
C4	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C5	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C6	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	100			BPD-0001	DD-101	L10T1	CN0-310	5GA-T1	
C8	100			BPD-0001	DD-101	L10T1	CN0-310	5GA-T1	
C9	5000			BPD-005	DD-502	BYA10D5	B-250	5HK-D5	①
C10	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C11	5000			BPD-005	DD-502	BYA10D5	B-250	5HK-D5	①
C12	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C13	5000			BPD-005	DD-502	BYA10D5	B-250	5HK-D5	①
C14	20000			BPD-02	DD-203	BYB6S2	B-120	5HK-S2	②
C15	5000			BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C16	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C18	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

① Some versions may use 4000mmf in this application. ② May not be used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	HARMONY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	470K	½		B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.

RESISTORS

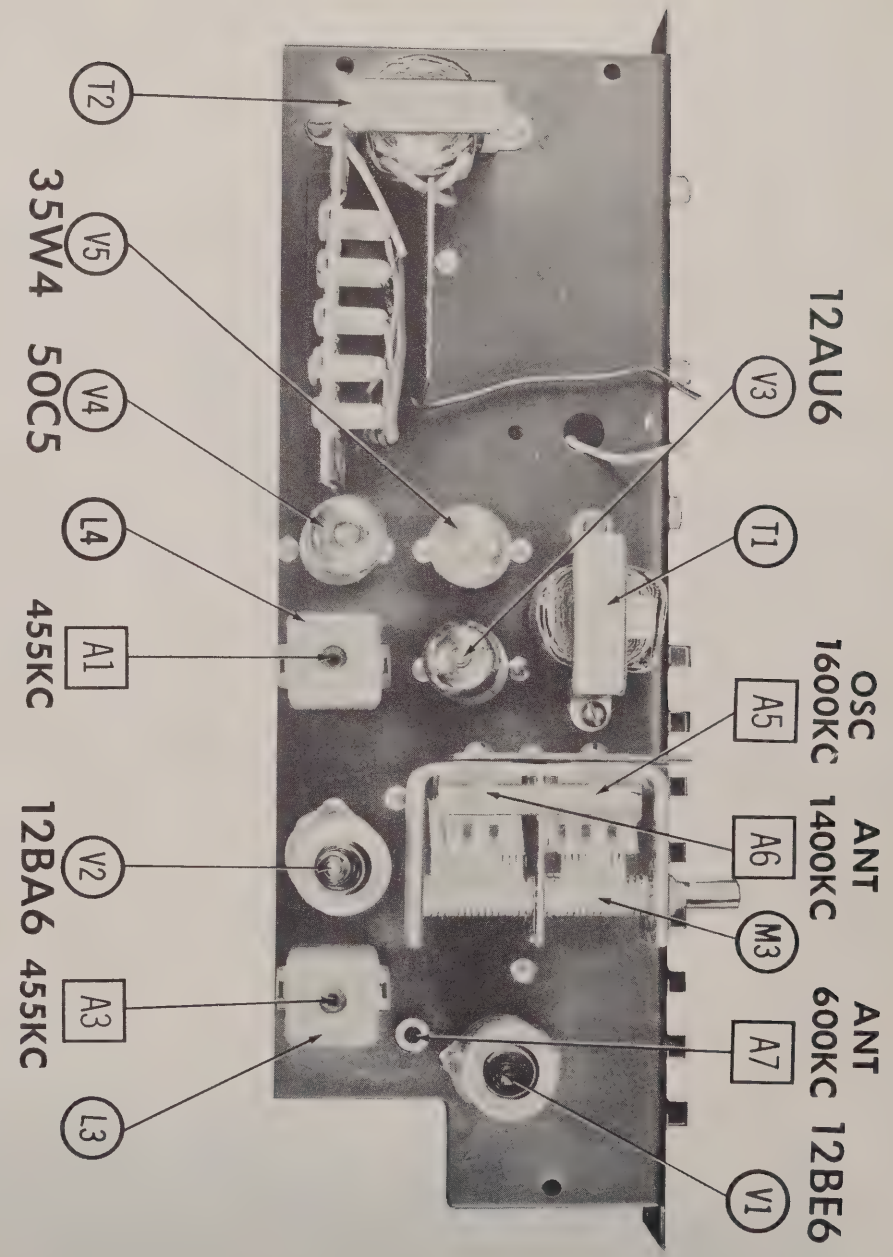
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	HARMONY PART No.	NOTES
R2	1meg			
R3	1000Ω			
R4	22K			
R5	1000Ω			
R6	470Ω			
R7	47K			
R8	470K			
R9	3.3meg			
R10	220K			Note 1
R11	68K			

ITEM No.	RATING OHMS	RATING WATT	HARMONY PART No.	NOTES
R12	6.8meg			
R13	100K			
R14	220K			
R15	1500Ω			
R16	470K			
R17	150Ω	1		
R18	470K			
R19	10Ω			
R20	1500Ω	2		

Note 1. Some versions may use 68K in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		HARMONY PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil		14-1075				
L2	Osc. Coil		14-1073				
L3	Input IF		16-6758	BC-352	12-C1	RF-1	
L4	Output IF		16-6758	BC-353	12-C2	RF-2	

TRANSFORMER (INPUT)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	HARMONY PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	: 70		G2008 ①	A-2923①	A-4744①	20A04 ①	A-6X	① Drill new mounting hole.
	IMPEDANCE								
	18.5K	3-4Ω							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HARMONY PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2800Ω	3-4Ω		Z1101	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HARMONY PART No.	QUAM PART No.	
S P1	3½"	PM	3-4Ω	1100 ①	3A07	① Master Station
SP2	3½"	PM	3-4Ω	1102 ②	3A070T	② Outdoor Remote Station
SP3	3½"	PM	3-4Ω	5018 ③	3A07	③ Remote Stations
SP4	3½"	PM	3-4Ω	5018 ③	3A07	
SP5	3½"	PM	3-4Ω	5018 ③	3A07	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		HARMONY PART No.	CBS PART No.	SYLVANIA PART No.	
M1	1N34A *		1N34A	1N38A	Detector (Pigtail)

* Some versions may use 1N54 in this application.

MISCELLANEOUS

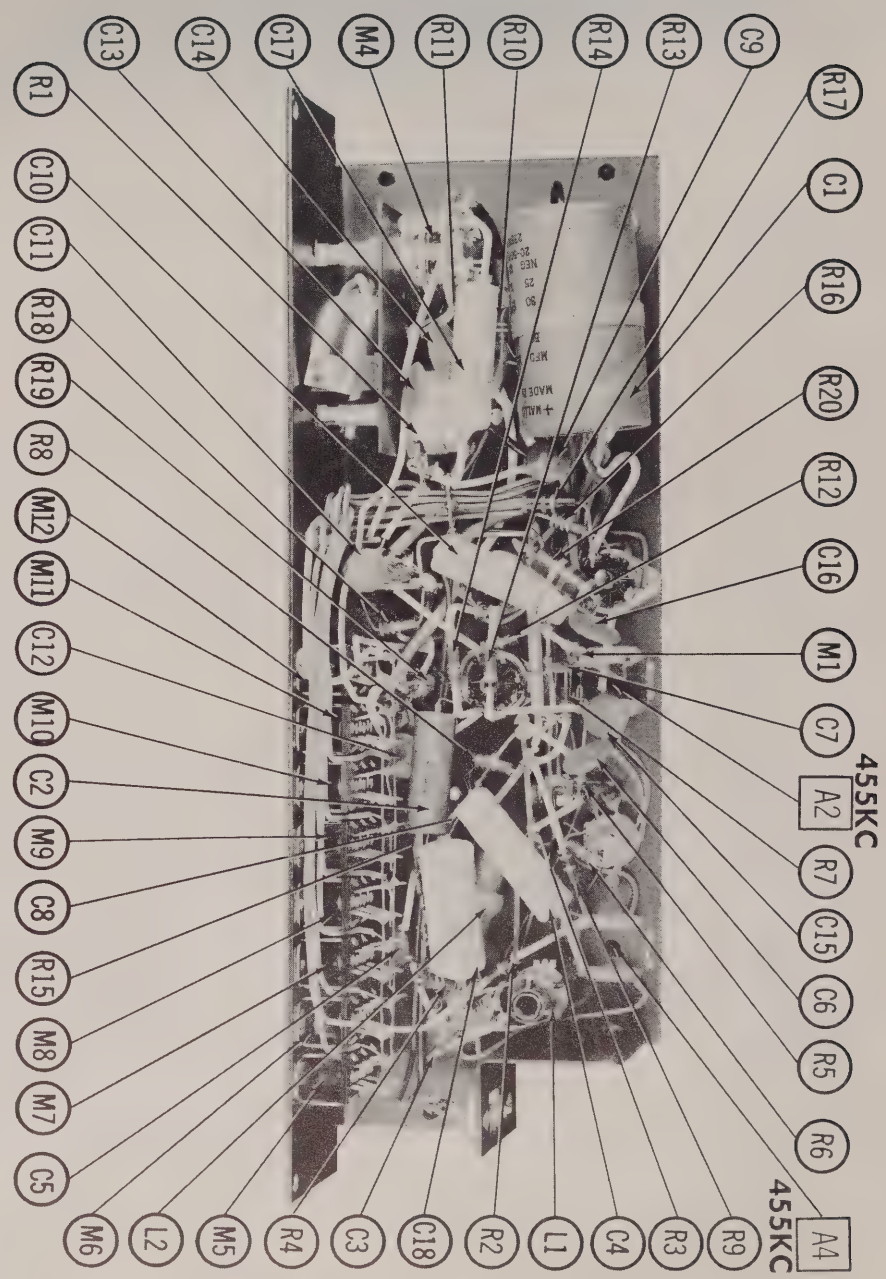
ITEM No.	PART NAME	HARMONY PART No.	NOTES
M2	Lamp		#47
M3	Tuning Cap.		2 Gant, Ant. 25-485mmf, Osc. 24-181mmf
M4	Switch		Function (3 Position, Rotary, Wafer Type)
M5	Switch		Remote Off-On (3Position, Slide Type)
M6	Switch		Remote Off-On (3Position, Slide Type)
M7	Switch		Remote Off-On (3Position, Slide Type)
M8	Switch		Remote Off-On (3 Position, Slide Type)
M9	Switch		Remote Off-On (3 Position, Slide Type)
M10	Switch		Remote Off-On (3 Position, Slide Type)
M11	Switch		Remote Off-On (3Position, Slide Type)
M12	Switch		Listen-Talk (3 PDT, Slide, Spring Return Type)

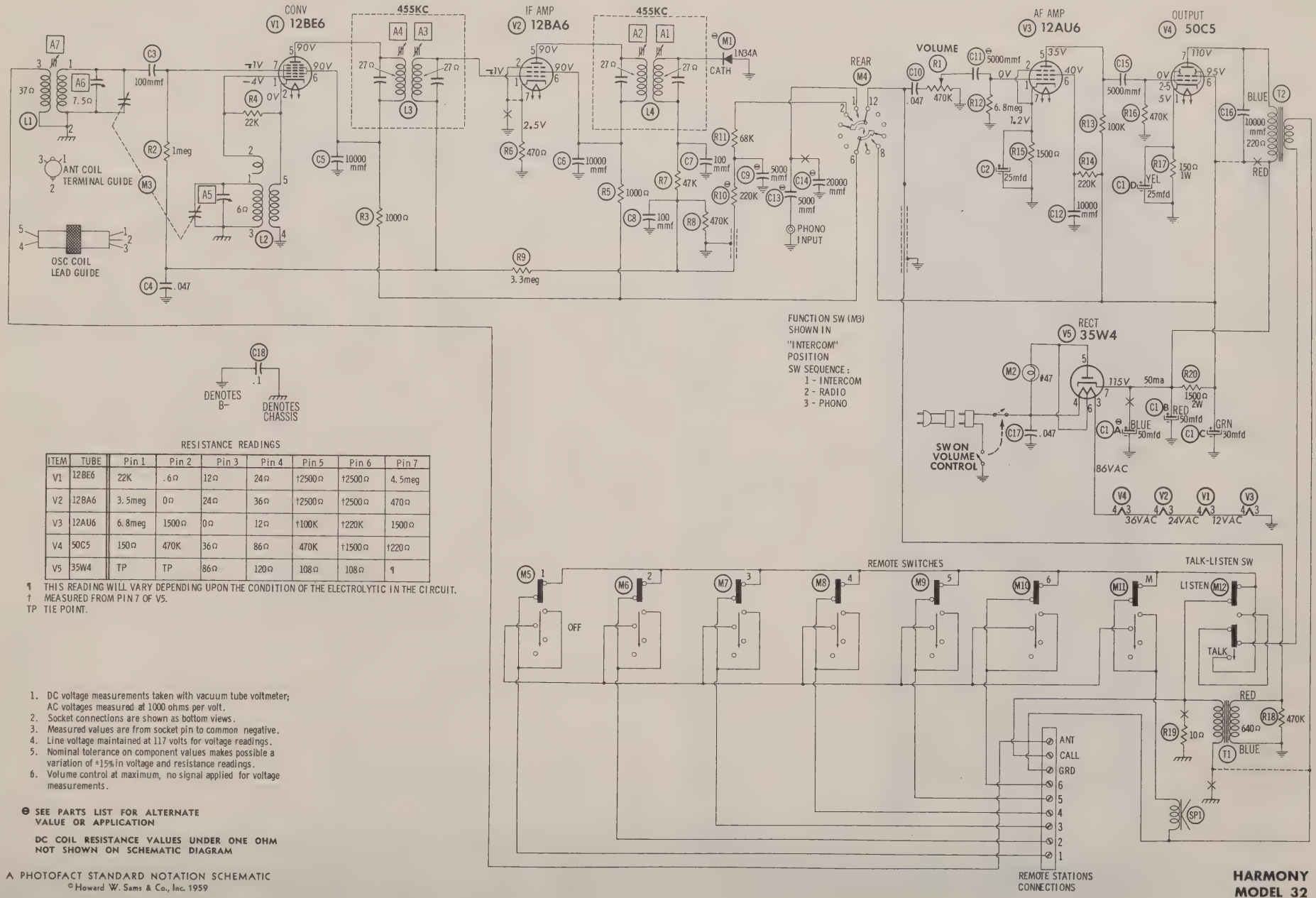
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.6Ω	12Ω	24Ω	†2500Ω	†2500Ω	4.5meg
V2	12BA6	3.5meg	0Ω	24Ω	36Ω	†2500Ω	†2500Ω	470Ω
V3	12AU6	6.8meg	1500Ω	0Ω	12Ω	†100K	†220K	1500Ω
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1500Ω	†220Ω
V5	35W4	TP	TP	86Ω	120Ω	108Ω	108Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
TP TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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HARMONY MODEL 32

PHOTOFACT* Folder

EIA MEMBER

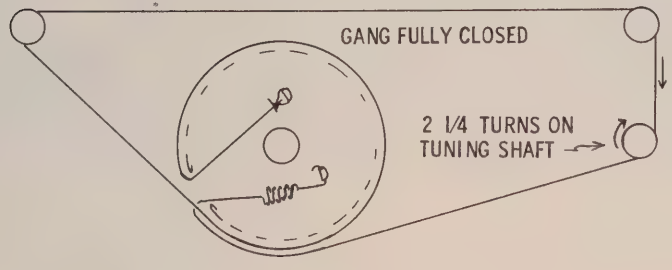
MILLER
MODEL 560

MILLER
MODEL 560

MILLER
MODEL 560

TRADE NAME	Miller Model 560
MANUFACTURER	J. W. Miller Co., 5917 S. Main St., Los Angeles 3, California
TYPE SET	AC Operated FM Tuner
TUBES	Six
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 23 Watts, .27 Amp@117 Volts AC
TUNING RANGE	FREQ. MOD. 88 - 108MC

DIAL CORD STRINGING



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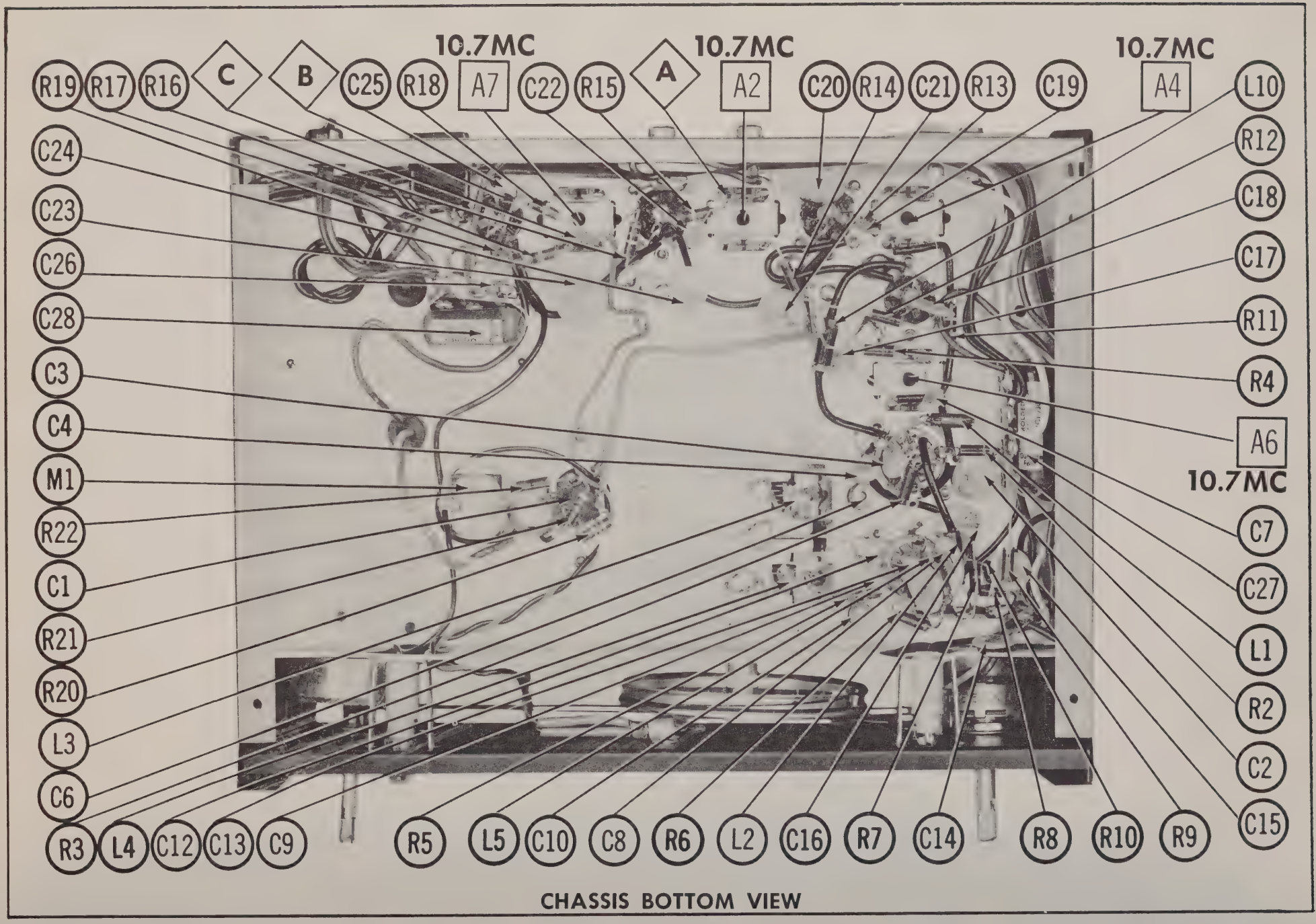


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amp. -Mixer	12AT7	
V2	Oscillator - AFC	12AT7	
V3	1st IF Amplifier	6BA6	

ITEM No.	USE	TYPE	NOTES
V4	2nd IF Amplifier	6AU6	
V5	Limiter	6AU6	
V6	Discriminator	6AL5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MILLER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■50	150	①	AFH3-08	B0150	FP213	TMT-5	T-025	TVLS-3440.6*
B	30	150			BR3015	TC47	TD-40-150	MT-1540	
C	▲30	150							

① C1A may be 30mfd in some versions.
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MILLER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C3	43								N750 5% ①
C4	1000			BPD-001	DD-102	BYA6D1	B-210	5HK-D1	②
C5	2.2			NPO-SI2.2	TCZ-2R2	CTA6V22C		5TCCB-V22	
C6									
C7	1000			BPD-001	DD-102	BYA6D1	B-210	5HK-D1	②
C8	5000			BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C9	100			N750-SI100	TCN-100	CTA6T1U	NT-531	5TCU-T1	N750 10%
C10									
C11	6.8			NPO-DI6.8	TCZ-6R8	C10V68C	CN0-568	5TCCB-V68	③
C12	10				TCN-10		CN7-410		N750 5%
C13	5000	1000		DAC-9	DD-502	BYA10D5	B-250	5HK-D5	
C14	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C15	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C16	20000	30		BPD-02	DD-203	BYB6S2	B-120	5HK-S2	④
C17	1000			BPD-001	DD-102	BYA6D1	B-210	5HK-D1	②
C18	5000	1000		DAC-9	DD-502	BYA10D5	B-250	5HK-D5	
C19	330				MD-331	L10T33	JL-333		10% ⑤
C20	5000	1000		DAC-9	DD-502	BYA10D5	B-250	5HK-D5	
C21	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	⑥
C22	330				MD-331	410T33	JL-333		10% ⑤
C23	5000	1600		DAC-9	DD30-502	HVE16D5		20HK-D5	
C24	10000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C25	330				MD-331	L10T33	JL-333		10% ⑤
C26	1000			BPD-001	DD-102	BYA6D1	B-210	5HK-D1	②
C27	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C28	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	⑦

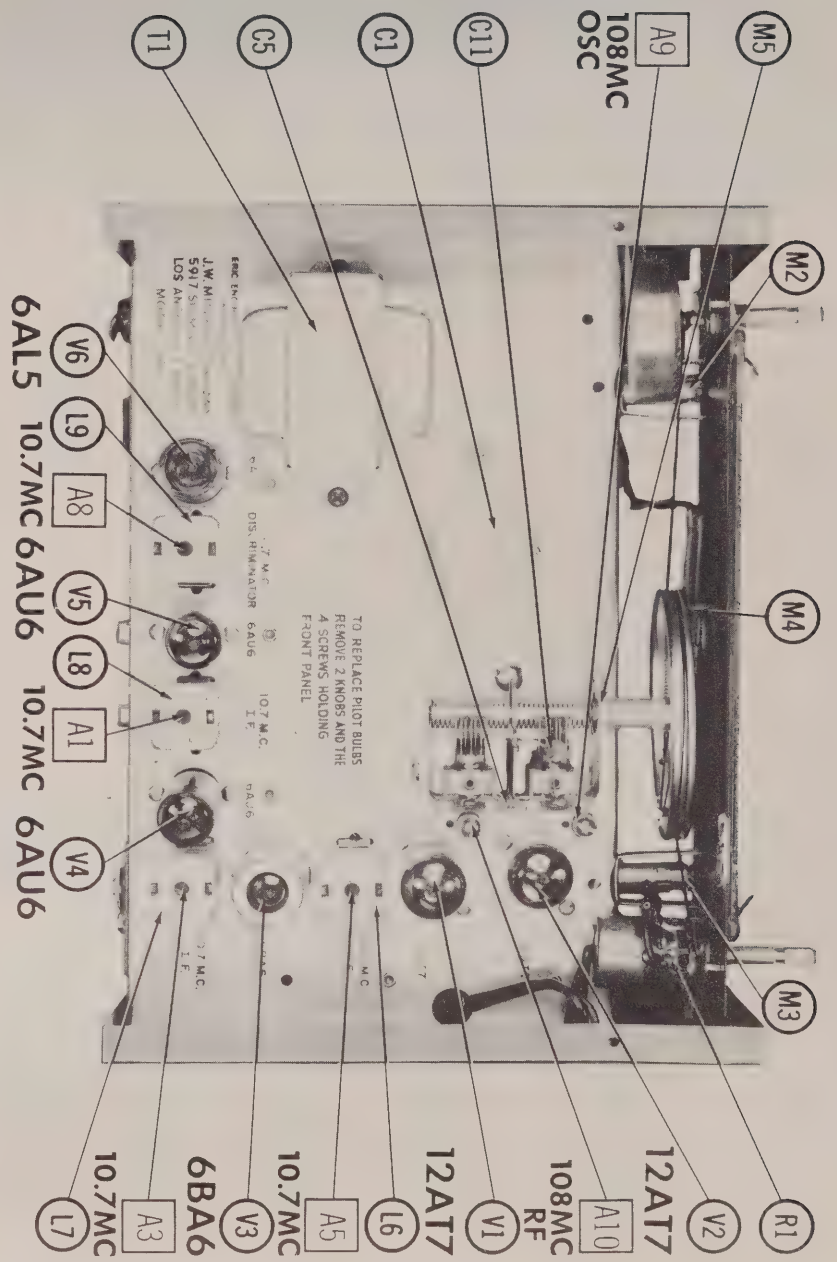
① Some versions may use 50mmf in this application.
② Some versions may use 1500mmf in this application.
③ Some versions may use 10mmf in this application.
④ Some versions may use 1000mmf in this application.
⑤ Some versions may use 470mmf in this application.
⑥ May not be used in some versions.
⑦ Some versions may use .05mfd 600V in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MILLER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	CM21005	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.

CHASSIS—TOP VIEW



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A4, A5, A6, A7, A8..GENERAL CEMENT #5097, 8727
WALSCO #2515
A9, A10.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	200mmf	High side to pin 7 (grid) of 12AT7 (V1). Low side to chassis.	10.7MC (Unmod.)	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A7	"
3.	"	"	"	"	DC probe thru 1meg to point Ⓒ. Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	200mmf	High side to pin 7 (grid) of 12AT7 (V1). Low side to chassis.	10.7MC (450KC SWP)	Point of non-interference	Vert. amp to point Ⓐ. Low side to chassis.	A1, A2, A3, A4, A5, A6	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	Vert. amp to point Ⓑ. Low side to chassis.	A7	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
3.	"	"	"	"	Vert. amp thru 27K to point Ⓒ. Low side to chassis.	A8	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	270Ω carbon resistor	High side thru 270Ω to antenna terminal. Low side to chassis.	88MC (Unmod.)	88MC	DC probe to point Ⓑ. Common to chassis.	L4, L3	Adjust for maximum deflection by compressing or expanding coil turns.
5.	"	"	108MC	108MC	"	A9, A10	Adjust for maximum deflection. Repeat steps 4 and 5.

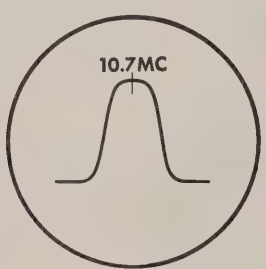
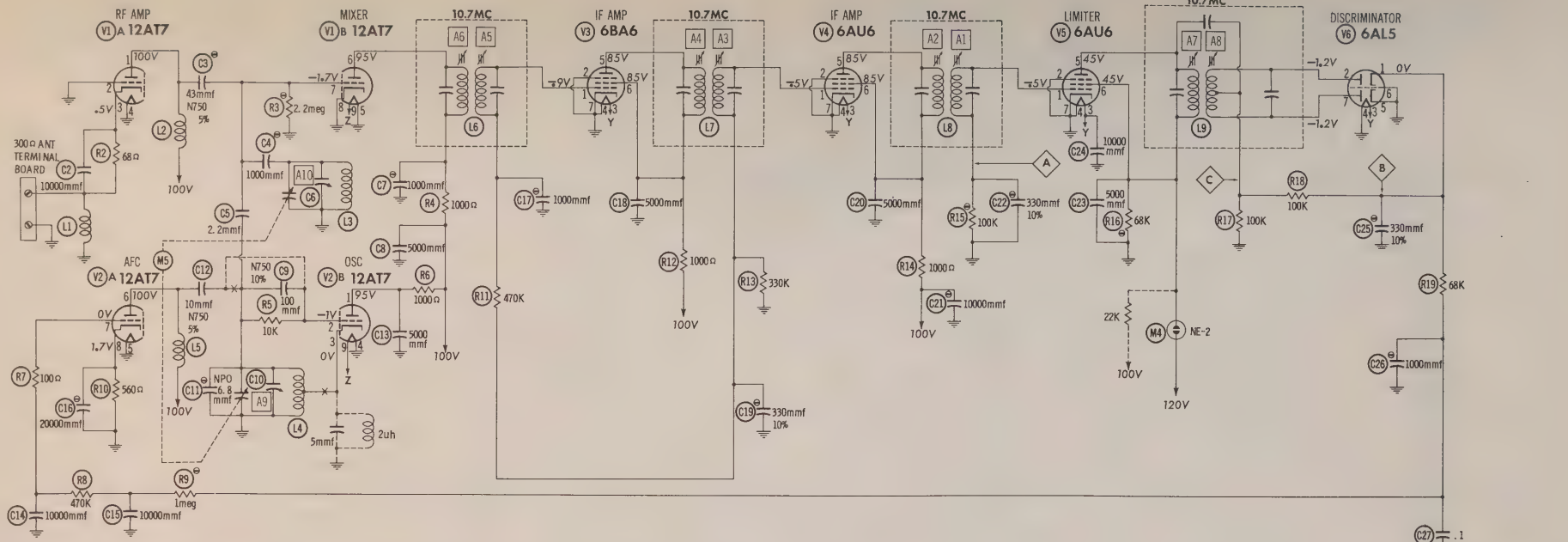


FIG. 1

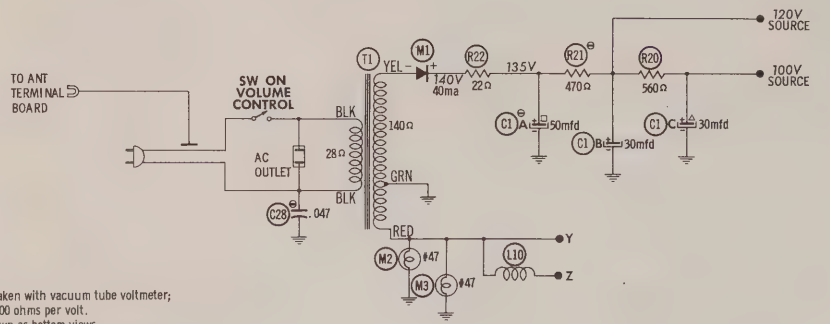
FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AT7	†1000Ω	0Ω	68Ω	0Ω	0Ω	†2000Ω	2.2meg	0Ω	.2Ω
V2	12AT7	†2000Ω	10K	0Ω	0Ω	0Ω	†1000Ω	1.7meg	560Ω	.1Ω
V3	6BA6	800K	0Ω	.1Ω	0Ω	†2000Ω	†2000Ω	0Ω		
V4	6AU6	330K	0Ω	.1Ω	0Ω	†2000Ω	†2000Ω	0Ω		
V5	6AU6	100K	0Ω	.1Ω	0Ω	†470Ω	†470Ω	0Ω		
V6	6AL5	200K	100K	.1Ω	0Ω	0Ω	0Ω	100K		

† MEASURED FROM OUTPUT OF M1.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MILLER
MODEL 560

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MILLER PART No.	NOTES
R2	68Ω			
R3	2.2meg			Note 1
R4	1000Ω			
R5	10K			
R6	1000Ω			
R7	100Ω			
R8	470K			
R9	1meg			Note 1
R10	560Ω			
R11	470K			
R12	1000Ω			

ITEM No.	RATING OHMS	RATING WATT	MILLER PART No.	NOTES
R13	330K			
R14	1000Ω			
R15	100K			Note 2
R16	68K			Note 3
R17	100K			
R18	100K			
R19	68K			
R20	560Ω			
R21	470Ω			Note 4
R22	22Ω			

Note 1. Some versions may use 1.5meg in this application.
Note 2. Some versions may use 150K in this application.
Note 3. Some versions may use 56K in this application.
Note 4. Some versions may use 560Ω in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MILLER PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	4602	19-1000	BC-561	4602		1 Microhenry
L2	RF Choke						3 Microhenries
L3	RF Coil						
L4	Osc. Coil						
L5	RF Choke	4602	19-1000	BC-561	4602		1 Microhenry
L6	1st IF Trans.	1463	16-3487	FM-254	1463		
L7	2nd IF Trans.	1463	16-3487	FM-254	1463		
L8	3rd IF Trans.	1463	16-3487	FM-254	1463		
L9	Discriminator	1464	17-3494	FM-253	1464		
L10	Fil. Choke	4606	19-1002	BC-563	4606		2.2 Microhenries

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA MILLER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V Ⓐ .27A	125V Ⓐ .040A Tap Ⓐ 6V Ⓐ 2.1A		6490	P9102 ①	P-3045 ①		PA8421 ①	26R38 ①	R-30X ①

① Drill new mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA MILLER PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.039A	K1734	1234AH	T065 SD-94 ①	50 K200 ①	① Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	MILLER PART No.	NOTES
M2	Lamp		#47
M3	Lamp		#47
M4	Lamp		Neon, NE-2
M5	Tuning Cap.		FM, 2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

*TRADE MARK

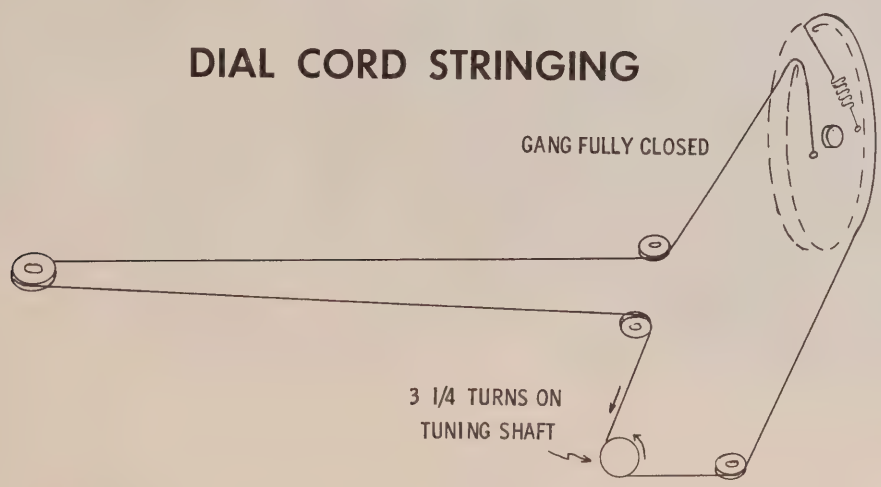
MUNTZ
MODEL 806A

MUNTZ
MODEL 806A

TRADE NAME	Muntz Model 806A		
MANUFACTURER	Muntz TV Inc., 1000 Grey Ave., Evanston, Illinois		
TYPE SET	AC Operated FM-AM Receiver With 4 Speed Automatic Record Changer		
TUBES	Eleven		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	98 Watts, . 98 Amp. @ 117 Volts AC (FM)
TUNING RANGE	BROADCAST 540 - 1650KC	FREQ. MOD.	88 - 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #PH-0018 - SEE WEBCOR 151 - PHOTOFACT SET 375 FOLDER 17 OR RECORD CHANGER MANUAL RC-10

DIAL CORD STRINGING

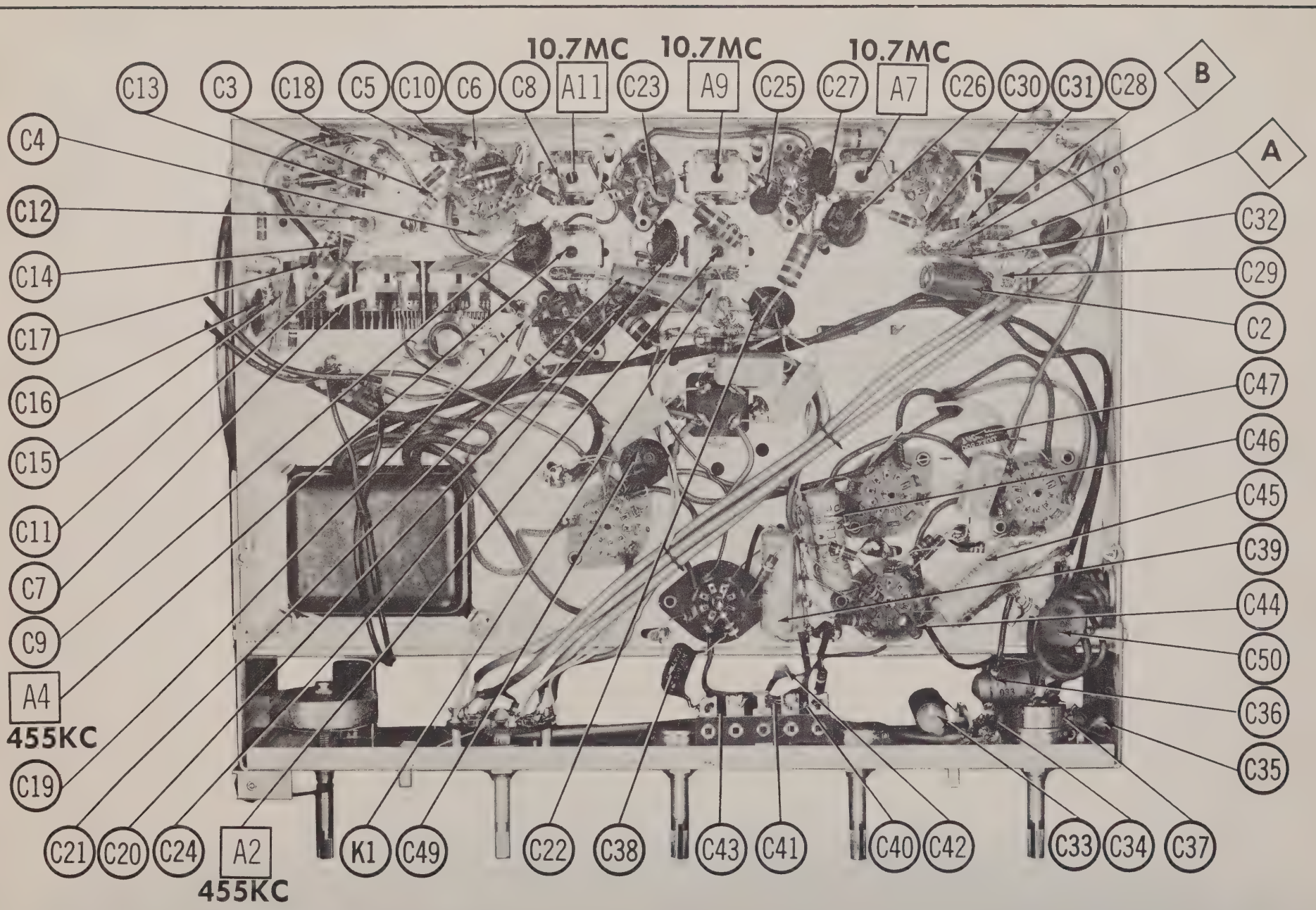


HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

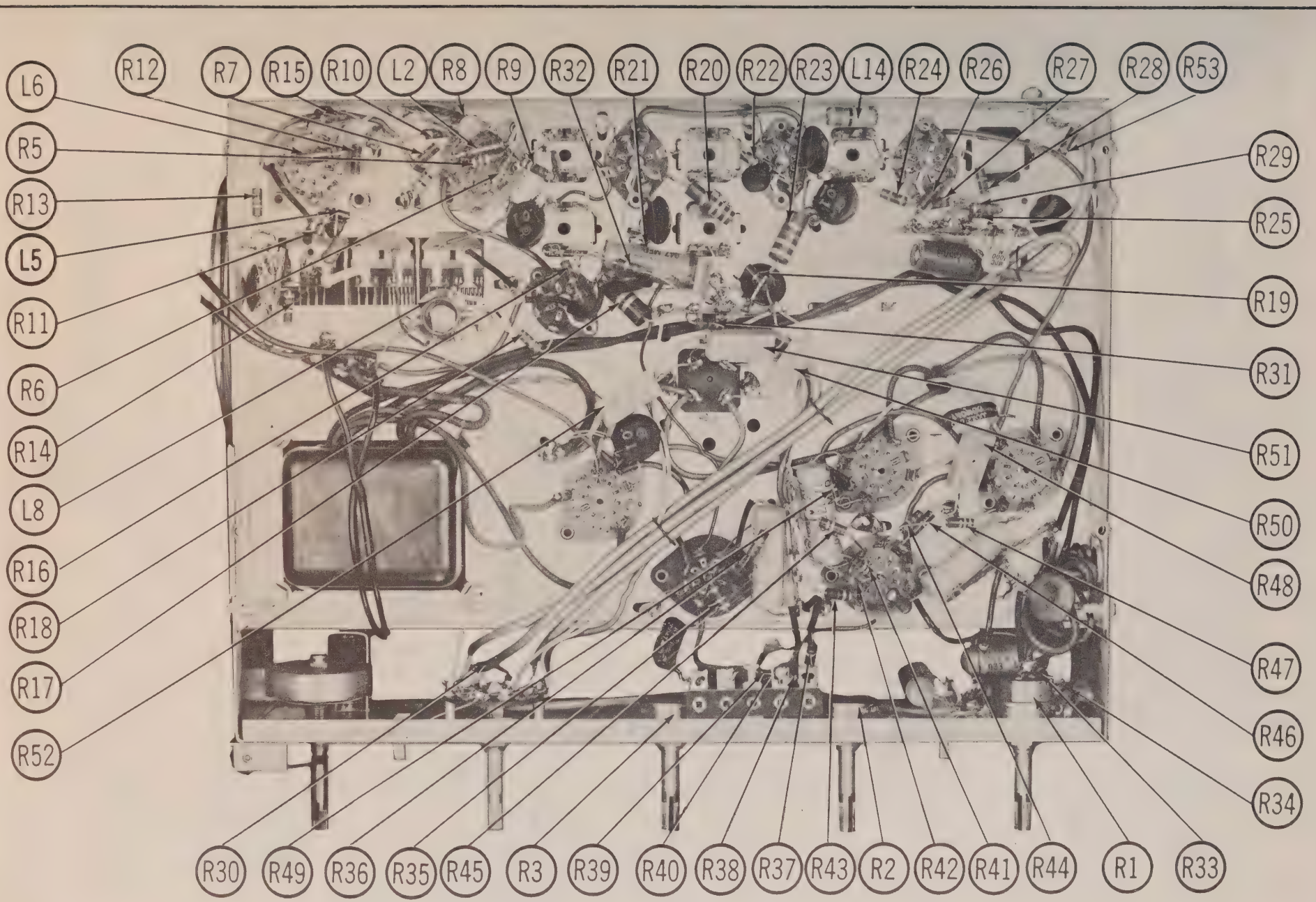
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H880

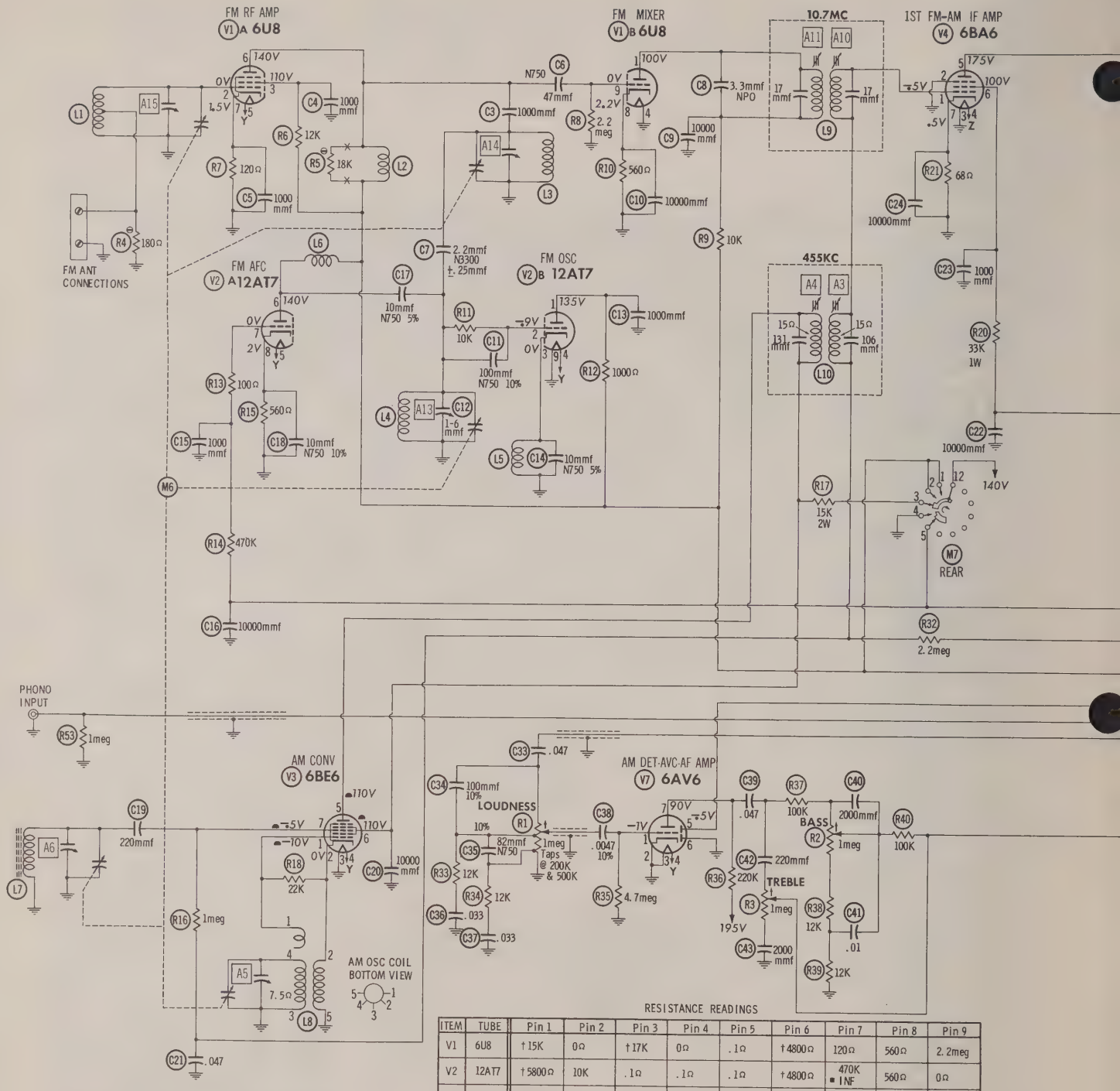
SET 434 FOLDER 8



CHASSIS BOTTOM VIEW - CAPACITOR, MISC., & ALIGN. IDENT.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6U8	†15K	0Ω	†17K	0Ω	.1Ω	†4800Ω	120Ω	560Ω	2.2meg
V2	12AT7	†5800Ω	10K	.1Ω	.1Ω	.1Ω	†4800Ω	470K ■ INF	560Ω	0Ω
V3	6BE6	▪22K	▪.8Ω	0Ω	.1Ω	†▪19K	†▪19K	▪4.2meg		
V4	6BA6	3.2meg	0Ω	0Ω	.1Ω	†4200Ω	† 38K	68Ω		
V5	6BA6	220K	0Ω	0Ω	.1Ω	†9500Ω	†9500Ω	0Ω		
V6	6AL5	1meg	1meg	0Ω	.1Ω	7800Ω	0Ω	8300Ω		
V7	6AV6	4.7meg	0Ω	0Ω	.1Ω	1meg	0Ω	†220K		
V8	12AX7	†220K	12K	1000Ω	.1Ω	.1Ω	†220K	120K	1800Ω	0Ω
V9	6973	†67Ω	NC	480K	0Ω	.1Ω	480K	220Ω	†67Ω	†277Ω
V10	6973	†55Ω	NC	470K	0Ω	.1Ω	470K	220Ω	†55Ω	†215Ω
V11	6CA4 EZ81	55Ω	NC	¶	.1Ω	0Ω	NC	58Ω	NC	NC

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
▪ MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 3 OF V3.
NC NO CONNECTION
■ MEASURED IN "FM-AFC" POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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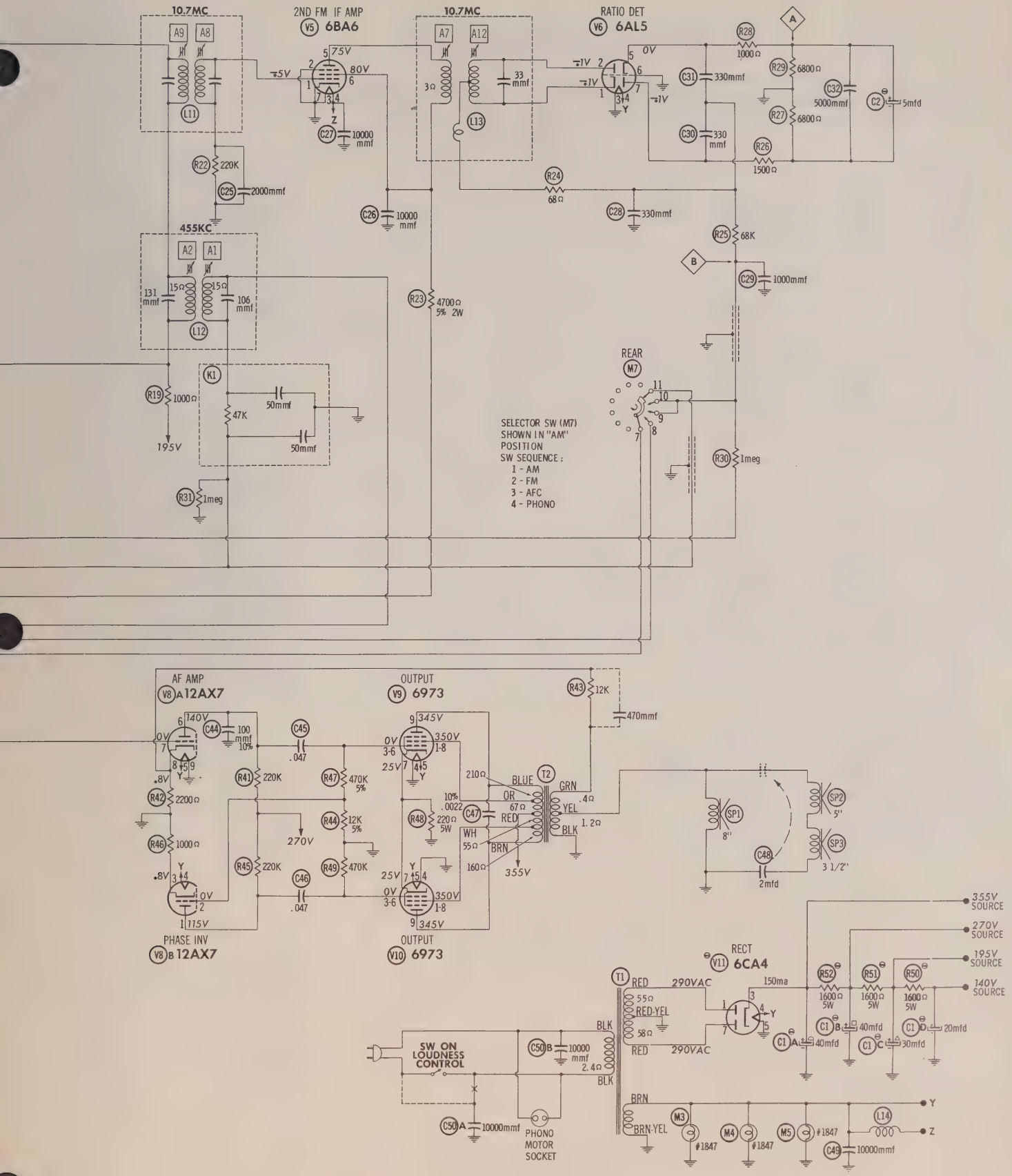


MUNTZ
MODEL 806A

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools: A1, A2, A3, A4, A7, A8, A9, A10, A11, A12... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6, A13, A14, A15..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1600KC	"	1600KC	"	A5	"
3.		Loop	1400KC	"	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	200mmf	High side to pin 9 (grid) of 6U8 (V1). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point (A). Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe thru 1meg to point (B). Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	200mmf	High side to pin 9 (grid) of 6U8 (V1). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A7, A8, A9, A10, A11	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. Amp. thru 27K to point (B). Low side to chassis.	A12	Reconnect C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	270Ω Carbon Resistor	High side to FM antenna terminal. Low side to chassis.	106MC (Unmod.)	FM	106MC	DC probe to point (A). Common to chassis.	A13, A14, A15	Adjust for maximum deflection.

FIG. 1

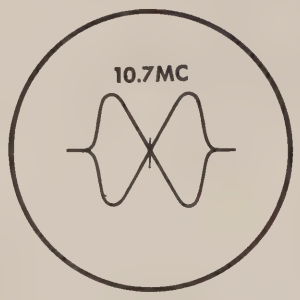
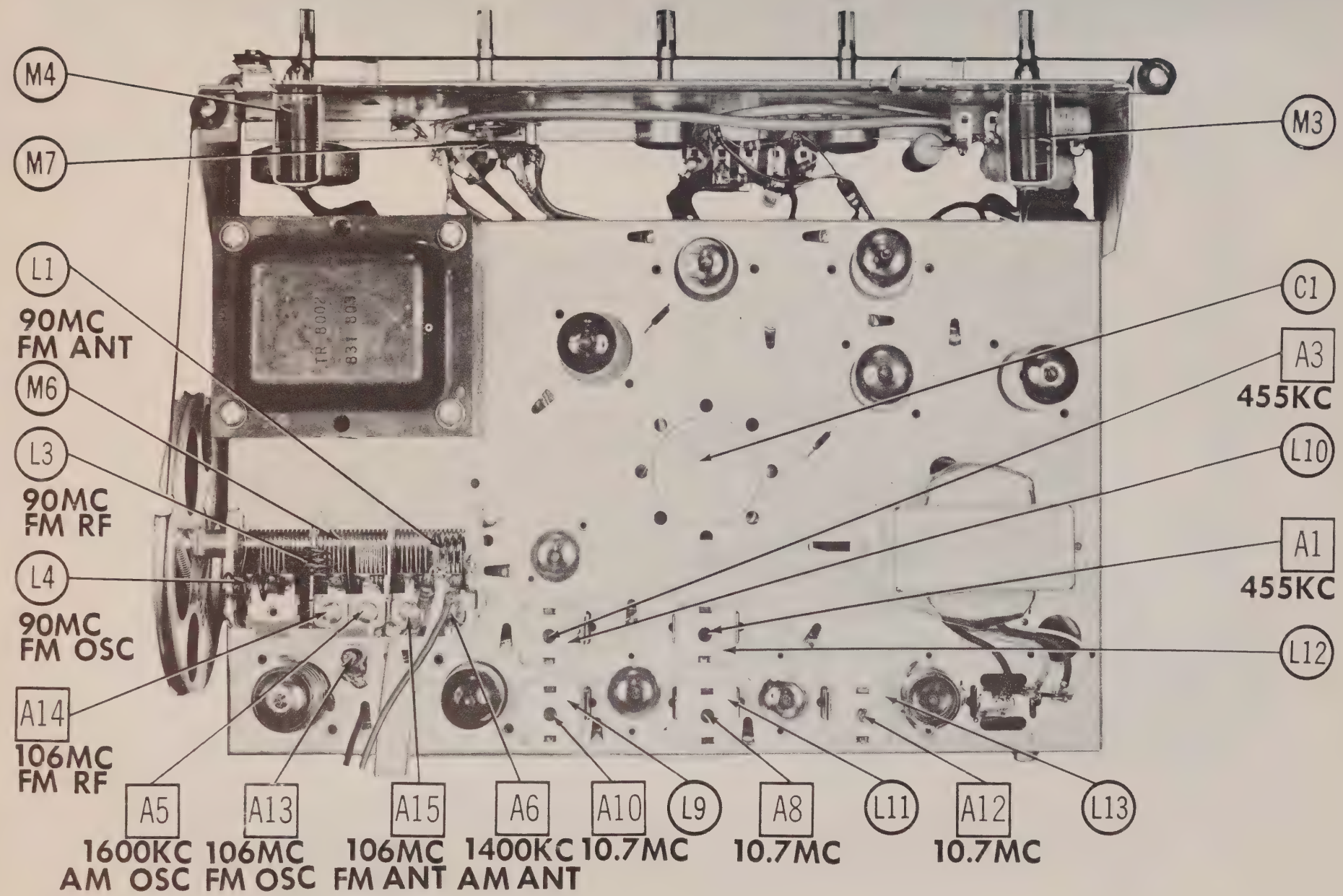


FIG. 2



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MUNTZ PART No.	NOTES
R4	180Ω		RC-180-18	Note 1
R5	18K		RC-1802-18	Note 2
R6	12K		RC-1202-18	
R7	120Ω		RC-120-18	
R8	2.2meg		RC-2204-18	
R9	10K		RC-1002-18	
R10	560Ω		RC-560-18	
R11	10K		RC-1002-18	
R12	1000Ω		RC-1001-18	
R13	100Ω		RC-100-18	
R14	470K		RC-4703-18	
R15	560Ω		RC-560-18	
R16	1meg		RC-1004-18	
R17	15K	2	RC-1502-12	
R18	22K		RC-2202-18	
R19	1000Ω		RC-1001-18	
R20	33K	1	RC-3302-11	
R21	68Ω		RC-068-18	
R22	220K		RC-2203-18	
R23	4700Ω 5%	2	RC-4701-12	
R24	68Ω		RC-068-18	
R25	68K		RC-6802-18	
R26	1500Ω		RC-1501-18	
R27	6800Ω		RC-6801-18	
R28	1000Ω		RC-1001-18	

ITEM No.	RATING OHMS	RATING WATT	MUNTZ PART No.	NOTES
R29	6800Ω		RC-6801-18	
R30	1meg		RC-1004-18	
R31	1meg		RC-1004-18	
R32	2.2meg		RC-2204-18	
R33	12K		RC-1202-18	
R34	12K		RC-1202-18	
R35	4.7meg		RC-4704-18	
R36	220K		RC-2203-18	
R37	100K		RC-1003-18	
R38	12K		RC-1202-18	
R39	12K		RC-1202-18	
R40	100K		RC-1003-18	
R41	220K		RC-2203-18	
R42	2200Ω		RC-2201-18	
R43	12K		RC-1202-18	
R44	12K 5%			
R45	220K		RC-2203-18	
R46	1000Ω		RC-1001-18	
R47	470K 5%		RC-4703-18	
R48	220Ω	5	RG-220-13	
R49	470K		RC-4703-18	
R50	1600Ω	5	RG-1601-15	Note 3
R51	1600Ω	5	RG-1601-15	Note 3
R52	1600Ω	5	RG-1601-15	Note 3
R53	1meg		RC-1004-18	

Note 1. Some versions may use 220Ω (Part #RC-2203-18).
Note 2. Not used in some versions.
Note 3. Some versions may use 3W (Part #RG-1601-13).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MUNTZ PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil	LC-8004					
L2	RF Choke	LC-8003					3.3 Microhenries
L3	FM RF Coil	LC-8001					
L4	FM Osc. Coil	LC-8001					
L5	Cathode Choke	LC-9125	19-1000		4580		1 Microhenry
L6	RF Choke	LC-8003					3.3 Microhenries
L7	Loopstick	AN-0023					
L8	AM Osc. Coil	LO-8001	14-1073	BC-393	*69-OSC		*Drill new mounting hole
L9	1st FM IF	LI-8002	16-3487	FM-254	1463		
L10	1st AM IF	LI-8001	16-6758	BC-352	12-C1	RF-1	
L11	2nd FM IF	LI-8002	16-3487	FM-254	1463		
L12	2nd AM IF	LI-8001	16-6758	BC-353	12-C2	RF-2	
L13	Ratio Detector	LO-8002	17-3498	FM-255	1465		
L14	Fil. Choke	LC-0080	19-1000	BC-561	4602	VP-9	1 Microhenry ①

* IRC Part #CLA

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA MUNTZ PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V .98A	580VCT ② .150A	6.3V 4.7A	TP-8002						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MUNTZ PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5800Ω CT Screen Taps ② 1000Ω CT	16Ω Tap ② 8Ω	TA-8002							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MUNTZ PART No.	QUAM PART No.	NOTES
SP1	8"	PM	6-8Ω	SK-0032	8A10X	
SP2	4"	PM	6-8Ω	SK-0033	4A1TZ8	
SP3	3½"	PM	3-4Ω	SK-0031	3A15TZ4.4	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MUNTZ PART No.	REPLACEMENT DATA
K1	Diode RF Filter	50mmf, 50mmf, 47K	CC-8001	Aerovox PA-99 Centralab PC-52 Cornell-Dubilier 111TM3 Sprague D-3

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA MUNTZ PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M1		93-T				

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	MUNTZ PART No.	JENSEN PART No.	WALCO PART No.	
M2			W-201DS ①	① Includes Cartridge

MISCELLANEOUS

ITEM No.	PART NAME	MUNTZ PART No.	NOTES
M3	Lamp	LS-0004-3	#1847
M4	Lamp	LS-0004-3	#1847
M5	Lamp	LS-0004-3	#1847
M6	Tuning Cap.	CT-8003	5 Gang (AM Sections: Ant. 6-220mmf, Osc. 5-100mmf)
M7	Switch	SW-8002	Function (4 Position, Rotary, Wafer Type)

CABINETS & CABINET PARTS

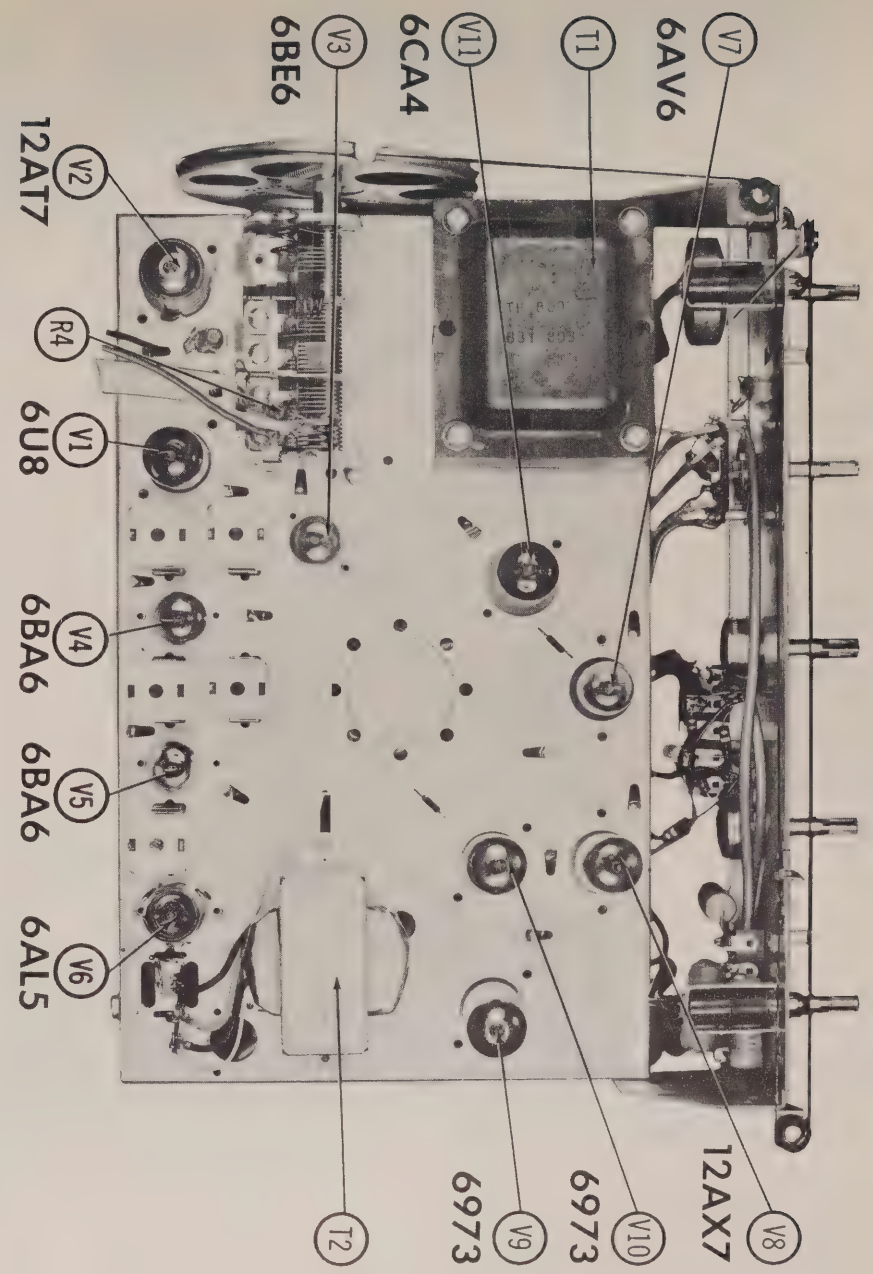
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KB-8006	Tuning
Knob	KB-8005	Control, 4 used
Cabinet	CW-0086	Mahogany
Cabinet	CW-0086-1	Blond
Dial Pointer	PR-8007	
Glass	DG-8003	Dial Scale

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amp. - FM Mixer	6U8	
V2	FM Osc. - FM AFC	12AT7	
V3	AM Converter	6BE6	
V4	1st FM - AM IF Amplifier	6BA6	
V5	2nd FM IF Amplifier	6BA6	
V6	Ratio Detector	6AL5	

ITEM No.	USE	TYPE	NOTES
V7	AM Det. - AVC - AF Amp.	6AV6	
V8	AF Amp. - Phase Inv.	12AX7	
V9	Output	6973	
V10	Output	6973	
V11	Rectifier	6CA4/EZ81	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MUNTZ PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	350	ME-5008 ①	AFH4-15-30	D0032	FP376. 9		Q-011. 1	TVLS-4635.4*
B	■40	350			BR435	TC77		MT-4510	
C	▲30	350							
D	20	350							
C2	5	50	CE-9100 ②	PRS50V5	BBR5-50	TT50X5	TD-5-50	MT-0504	TVA-1303

① Some versions may use Part #CE-8002. ② Some versions may use Part #CE-9001
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MUNTZ PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	1000		CC-0218	SI-1000	D6-102	LT6D1	UC-521	5HK-D1	
C4	1000		CC-0131	BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C5	1000		CC-0131	BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C6	47		CC-0156	N750-DI 47	DTN-47	CTA6Q47U	CN7-447	5TCU-Q47	N750
C7	2. 2		CC-0205						N3300±.25mmf
C8	3. 3		CC-0217	NPO-DI 3. 3	DTZ-3R3	CTA6V33C	CNO-533	5TCCB-V33	NPO
C9	10000		CC-0167	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C10	10000		CC-0167	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C11	100		CC-0163	N750-DI 100	DTN-100	CTA6T1U	CN7-310	5TCU-T1	N750 10%
C12	1-6		CT-0022						
C13	1000		CC-0131	BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C14	10		CC-0213		DTN-10		CN7-410		N750 5%
C15	1000		CC-0131	BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C16	10000		CC-0167	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	10		CC-0213		DTN-10		CN7-410		N750 5%
C18	10		CC-0213	N750-DI 10	DTN-10		CN7-410	5TCU-Q1	N750 10%
C19	220		CC-0187	BPD-00022	DD-221	L10T22	B-322	5GA-T22	

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MUNTZ PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C20	10000		CC-0167	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C21	. 047	200	CP-0068	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C22	10000		CC-0167	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C23	1000		CC-0131	BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C24	10000		CC-0167	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C25	2000		CC-0160	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C26	10000		CC-0167	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C27	10000		CC-0167	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C28	330		CC-0188	BPD-00033	DD-331	L10T33	B-330	5GA-T33	
C29	1000		CC-0117	BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C30	330		CC-0188	BPD-00033	DD-331	L10T33	B-330	5GA-T33	
C31	330		CC-0188	BPD-00033	DD-331	L10T33	B-330	5GA-T33	
C32	5000		CC-0165	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C33	. 047	200	CP-0068	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C34	100		CC-0163	NPO-SI 100	D6-101	CTA6T1C	CNO-310	5GA-T1	10%
C35	82		CC-0157	N750-SI 82	TCN-82	CTA6Q82U	CN7-482		N750 10%
C36	. 033	400	CP-0057	P488N-033		CUB4S33	GEM-4133	4TM-S33	
C37	. 033	400	CP-0057	P488N-033		CUB4S33	GEM-4133	4TM-S33	
C38	. 0047	600	CPM-0113				GEM-16247		10%
C39	. 047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C40	2000		CC-0160	BPD-002	DD-202	BYA10D2	B-322	5HK-D2	
C41	. 01	200		P288N-01	D6-103	CUB2S1	GEM-411	2TM-S1	
C42	220		CC-0187	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C43	2000		CC-0160	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C44	100		CC-0163	NPO-SI 100	D6-101	CTA6T1C	ZT-531	5TCC-T1	10%
C45	. 047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C46	. 047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C47	. 0022	600	CPM-0100						10%
C48	2. 0	50	CP-0098						
C49	10000		CC-0167	BPD-01	DD-103	BYA10S1	B-120	5HK-S1	
C50A	10000		CC-0132	BPD-2X01	DD3-103	BYD6S1	B-110	5HK-2S1	
B	10000						B-110		

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MUNTZ PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	VC-8006	BT-165		Q18-137XX	UDT-289	Loudness, Taps @ 200K & 500K
B	Switch			KB-1 or KR-1*		76-1	US-26	
R2A	1meg	½	VC-8005	B-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	1meg	½	VC-8005	B-69	A47-1meg-S	Q11-137	U54	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

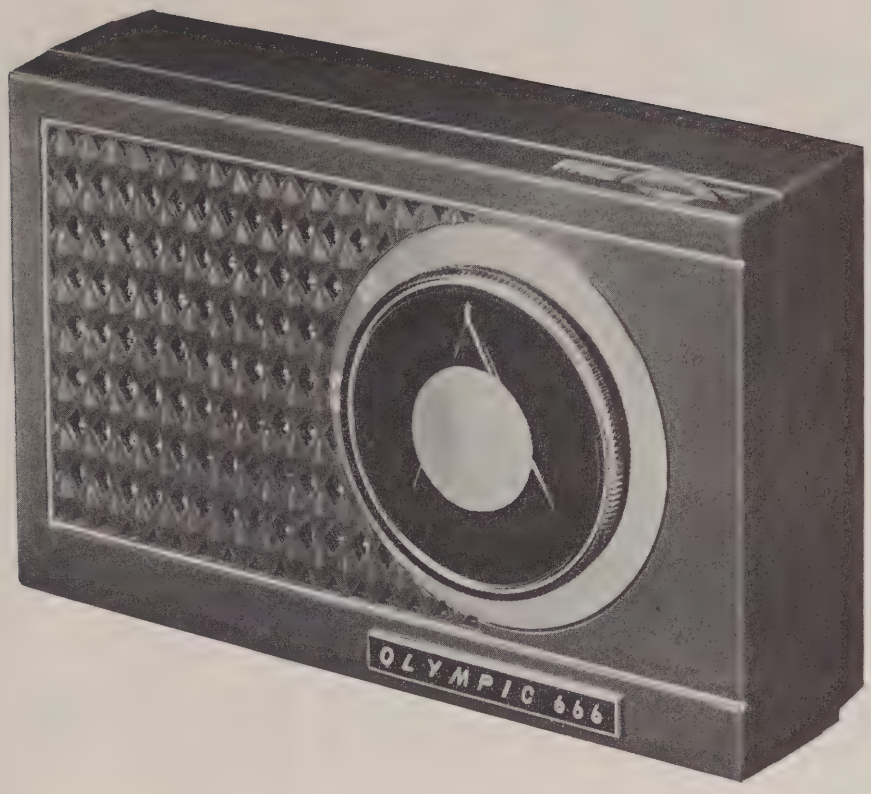
* Use KR with CRL "Red Label" Controls and KB with "Blue Label" Controls.

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

OLYMPIC MODEL 666

OLYMPIC MODEL 666



OLYMPIC MODEL 666

TRADE NAME	Olympic Model 666
MANUFACTURER	Olympic Radio & Tel. Corp., 34-01 38th Ave., Long Island City 1, N. Y.
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	530 - 1750KC
RATING	8.7MA @ 9 Volts DC(No Signal, Min. Volume) 9.2MA @ 9 Volts DC(Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1, A2, A3, A5..... GENERAL CEMENT #5097, 8282, 8606, 8606L, 9089, 9091
WALSCO #2526, 2541, 2542, 2543, 2544
A4, A6..... GENERAL CEMENT #5000, 5003, 5009, 8290
WALSCO #2515, 2520, 2523, 2525, 2537

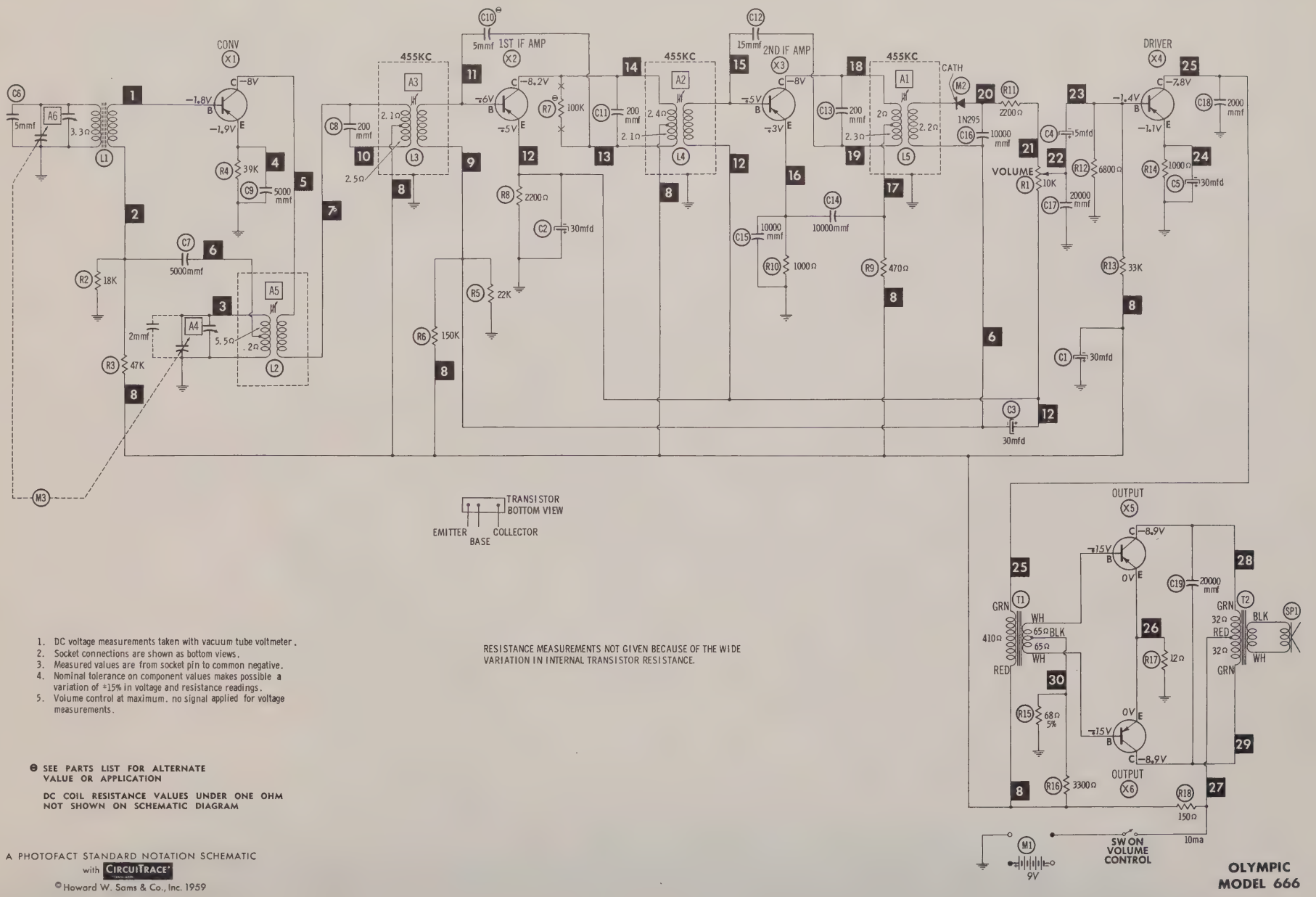
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1700KC	1700KC	"	A4	"
3.		"	600KC	600KC	"	A5	Adjust for maximum output while rocking tuning gang. Repeat Steps 2 and 3.
4.		"	1400KC	Tune for 1400KC signal	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

H887

SET 434 FOLDER 9



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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OLYMPIC MODEL 666

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	GT761R	Converter		2N412	2N486	2N140	PNP
X2	GT760	1st IF Amplifier		2N410	2N483	2N139	PNP
X3	GT760R	2nd IF Amplifier		2N410	2N483	2N139	PNP
X4	GT81R	Driver		2N405	2N362	2N109	PNP
X5	GT109	Output		2N407	2N632	2N109	PNP
X6	GT109	Output		2N407	2N632	2N109	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	30	12		XPP-12030	NL30-15	TT15X30	ML30-15	MQ-0130	TE-1158
C2	30	6		PWE6030	NL30-6	TT6X30	ML30-6	MQ-0130	TE-1092
C3	30	6		PWE6030	NL30-6	TT6X30	ML30-6	MQ-0130	TE-1092
C4	5	3		PWE3005	NL5-6	TT6X5	ML5-6		TE-1052, 2
C5	30	6		PWE6030	NL30-6	TT6X30	ML30-6	MQ-0130	TE-1092

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	5			SI5	D6-050	LT6V5	ZT-555	5GA-V5	
C7	5000			BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C8	200			SI200	D6-201	LT6T2	UC-532	5GA-T2	
C9	5000			BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C10	5			SI5	D6-050	LT6V5	ZT-555	5GA-V5	①
C11	200			SI200	D6-201	LT6T2	UC-532	5GA-T2	
C12	15			SI15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C13	200			SI200	D6-201	LT6T2	UC-532	5GA-T2	
C14	10000			BPP-01	DD-103	BYA10S1	B-110	5HK-S1	
C15	10000			BPP-01	DD-103	BYA10S1	B-110	5HK-S1	
C16	10000			BPP-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	20000			BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C18	2000			BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C19	20000			BPD-02	DD-203	BYB6S2	B-120	5HK-S2	

① Some versions may use 15mmf in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	10K	1/4	PTJ25140					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

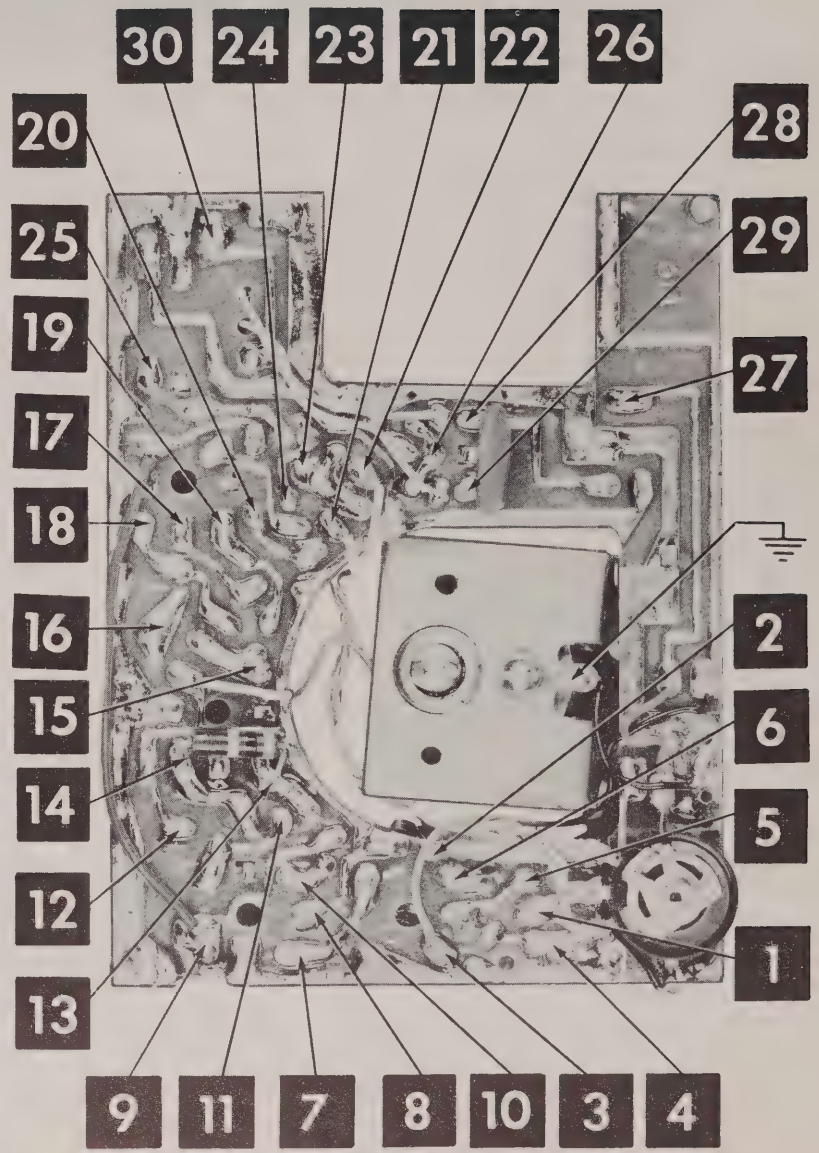
ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R2	18K			
R3	47K			
R4	39K			
R5	22K			
R6	150K			
R7	100K			①
R8	2200Ω			
R9	470Ω			
R10	1000Ω			

ITEM No.	RATING		OLYMPIC PART No.	NOTES
	OHMS	WATT		
R11	2200Ω			
R12	6800Ω			
R13	33K			
R14	1000Ω			
R15	68Ω 5%			
R16	3300Ω			
R17	12Ω			
R18	150Ω			

① Not used in some versions.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		OLYMPIC PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	LPJ25134					
L2	Osc. Coil	CLJ25133					
L3	1st IF	TRJ25137					
L4	2nd IF	TRJ25138					
L5	3rd IF	TRJ25139					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	: 1	TRJ25135	GH110		TA-28	TR-4		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1300Ω CT	11Ω	TRJ25136	GH108			TA-26			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	2½"	PM	11Ω	SKJ25145	25A07Z11	

BATTERIES

ITEM No.	VOLTAGE	OLYMPIC PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			P6		226		M1600	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		OLYMPIC PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N295		1N60	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M3	Tuning Cap. Printed Board	CVJ25144 614	2 Gang, Ant. 21-209mmf, Osc. 9-77mmf

CABINETS & CABINET PARTS

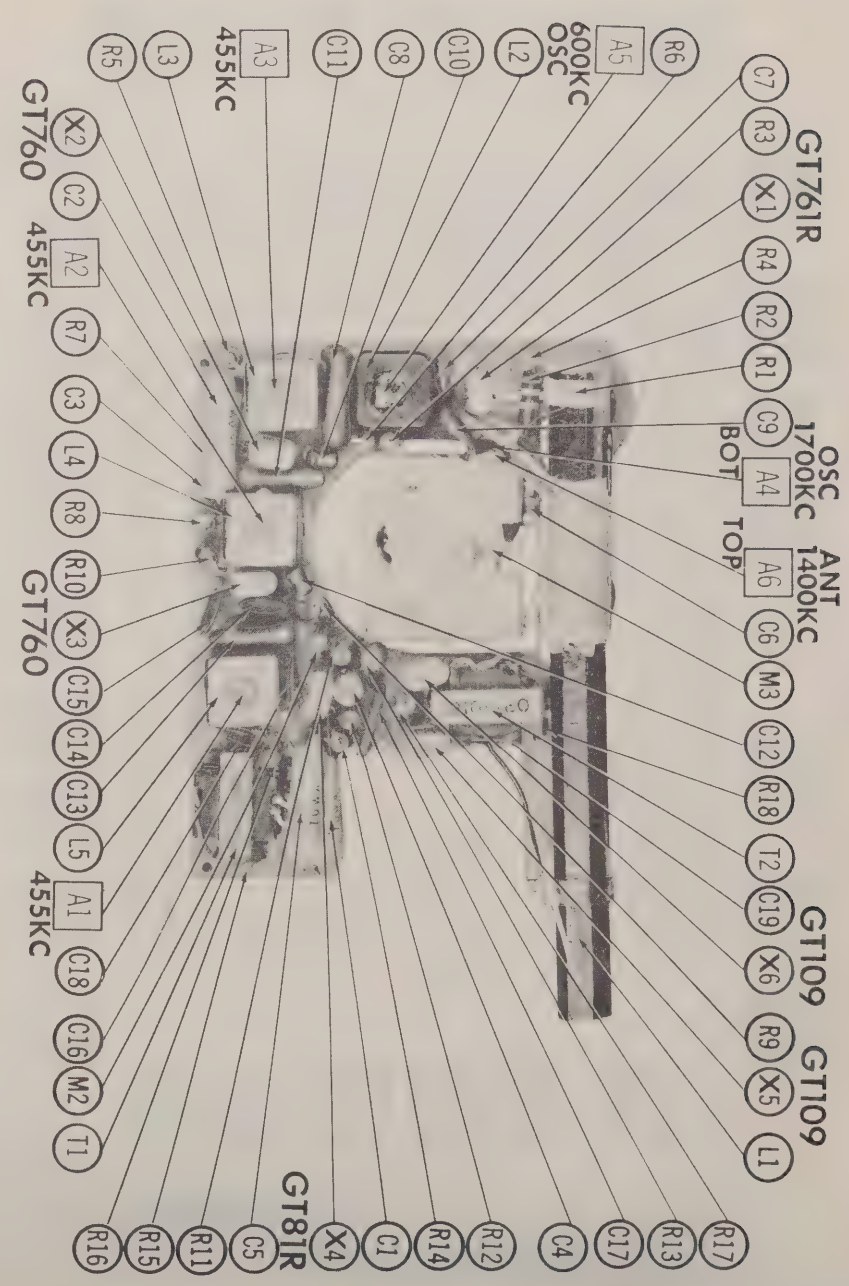
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KNJ25148	Tuning
Knob	KNJ25141	Off-On-Volume
Cabinet Front	CAJ25142	
Cabinet Back	CAJ25143	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PHILCO MODEL G-681 (Code 124)

PHILCO MODEL
G-681 (Code 124)

TRADE NAME	Philco Model G-681 (Code 124)
MANUFACTURER	Philco Corp. Tioga & "C" Streets, Philadelphia, Pa
TYPE SET	Three Power Portable AM Receiver
TUBES	Four
POWER SUPPLY	110-120 Volts AC-DC (OR) 7.5 Volts "A" Supply & 90 Volts "B" Supply
RATING	8 Watts, .12 Amp@117 Volts AC (OR) 54MA@7.5 Volts DC & 8.8MA@90 Volts DC
TUNING RANGE—BROADCAST	540 - 1620KC

PHILCO MODEL
G-681 (Code 124)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1mfd capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A3..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A4, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A5..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to antenna stator lug of tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200mmf to reduce hum modulation.
2.		Loop	1620KC	1620KC	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	580KC	580KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2 & 3.
4.		"	1400KC	Tune for 1400KC signal	"	A6	"
5.		"	580KC	Tune for 580KC signal	"	L1	Adjust for maximum output by sliding coil on core.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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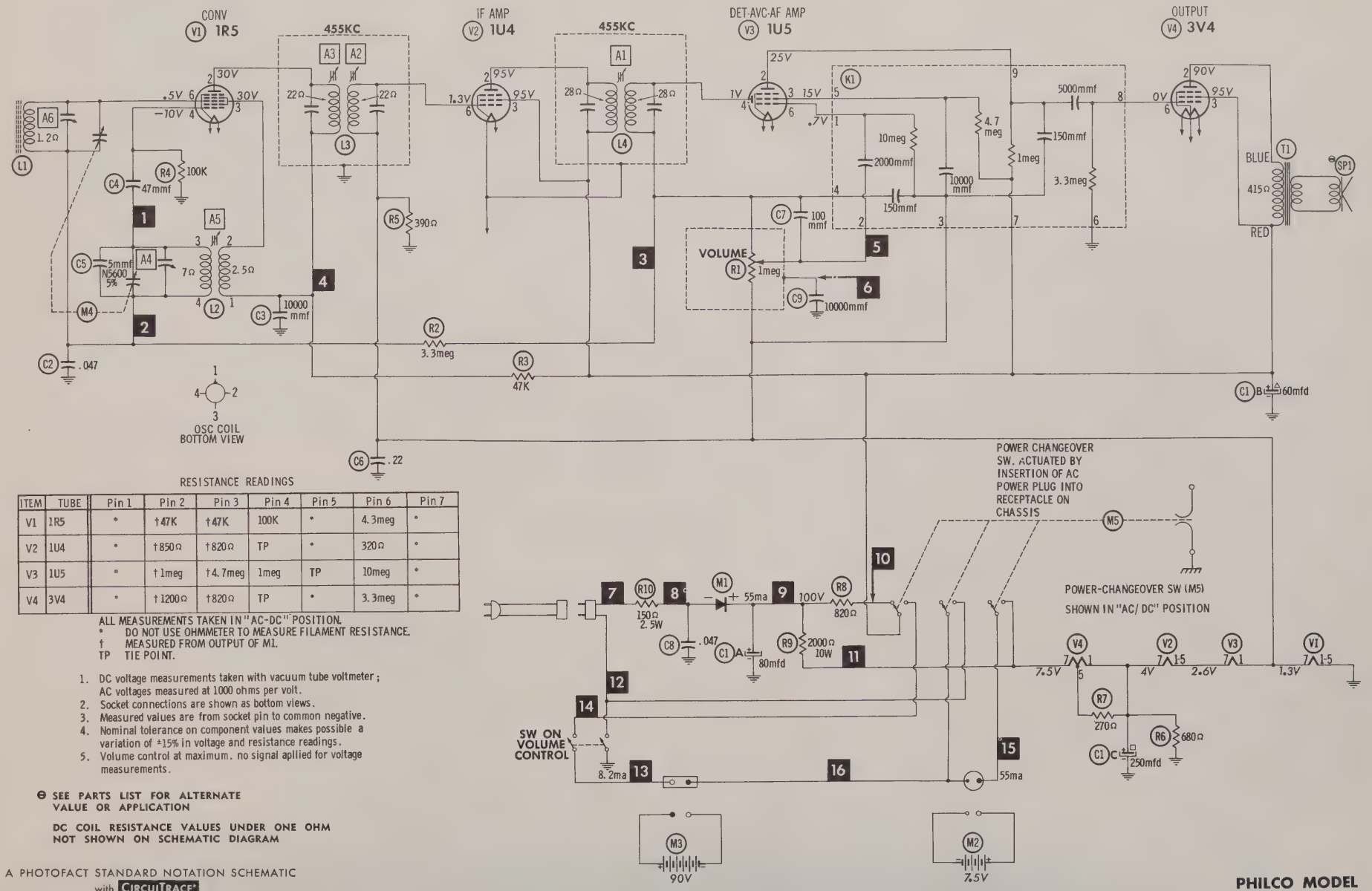
H886

SET 434 FOLDER 10



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	*	†47K	†47K	100K	*	4.3meg	*
V2	1U4	*	†850Ω	†820Ω	TP	*	320Ω	*
V3	1U5	*	†1meg	†4.7meg	1meg	TP	10meg	*
V4	3V4	*	†1200Ω	†820Ω	TP	*	3.3meg	*

ALL MEASUREMENTS TAKEN IN "AC-DC" POSITION.
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
TP TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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PHILCO MODEL G-681 (Code 124)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det. -AVC-AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	30-2585-7	AFH3-64-65				FMD-303	PCL-3414.3
B	▲60	150						MTH-1225	
C	■250	10							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.047	200	30-4650-45	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C3	10000		30-1262	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C4	47		30-1230-4	SI47	D6-470	LT6Q47	UC-5447	5GA-Q47	
C5	5		30-1224-135						N5600 5%
C6	.22	100	30-4656-1	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C7	100		62-110009001	SI100	D6-101	LT6T1	UC-531	5GA-T1	
C8	.047	400	30-4650-45	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C9	10000		30-1262	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½	33-5575-6					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	PHILCO PART No.	NOTES
R2	3.3meg		66-5338340	
R3	47K		66-3478340	
R4	100K		66-4108340	
R5	390Ω		66-1398340	
R6	680Ω		66-1688340	
R7	270Ω		66-1278340	
R8	820Ω		66-1828340	
R9	2000Ω	10	33-1362-5	Fuse Type
R10	150Ω	2.5	33-1366-1	

COILS (RF-IF)

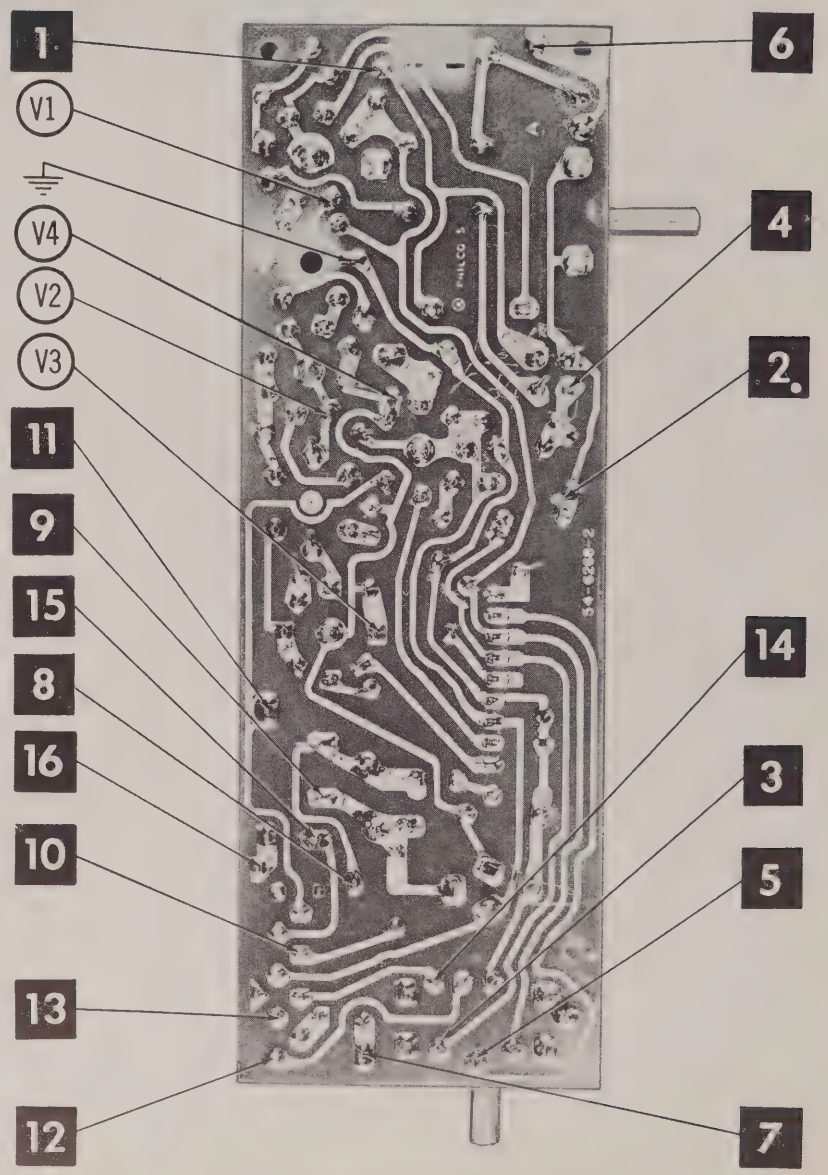
ITEM No.	USE	REPLACEMENT DATA PHILCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick	32-4755-2					
L2	Osc. Coil	32-4618-3					
L3	Input IF	32-4583-8	16-6780	BC-356	13-PC1	RF-4	
L4	Output IF	32-4583-9	16-6780	BC-357	13-PC2	RF-4	

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo

*TRADE MARK

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	10K	3-4Ω	32-8434-1		A-2998		A-3329	24S49	S-11X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	36-1654-23 ①	4A07	① Alternate Part #36-1654-10

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PHILCO PART No.	REPLACEMENT DATA
K1	Audio Circuit	150mmf, 150mmf, 2000mmf, 5000mmf, 10000mmf, 1meg, 3.3meg, 4.7meg, 10meg	30-6014	Aerovox PA-521 Centralab PC-328 Sprague DP-1

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	PHILCO PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.054A	34-8046-3	1234AH	T065 SD-94 ①	65 K200 ①	① Silicon Type

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M2 M3	7.5V 90V	P-31 P-176	C5	P60	717	479	M9	M214	

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M4	Tuning Cap.	31-2783-10	2 Gang
M5	Switch Printed Board	42-2061-1 54-6268-2	AC-DC-Battery (3PDT, Slide, Spring Return Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

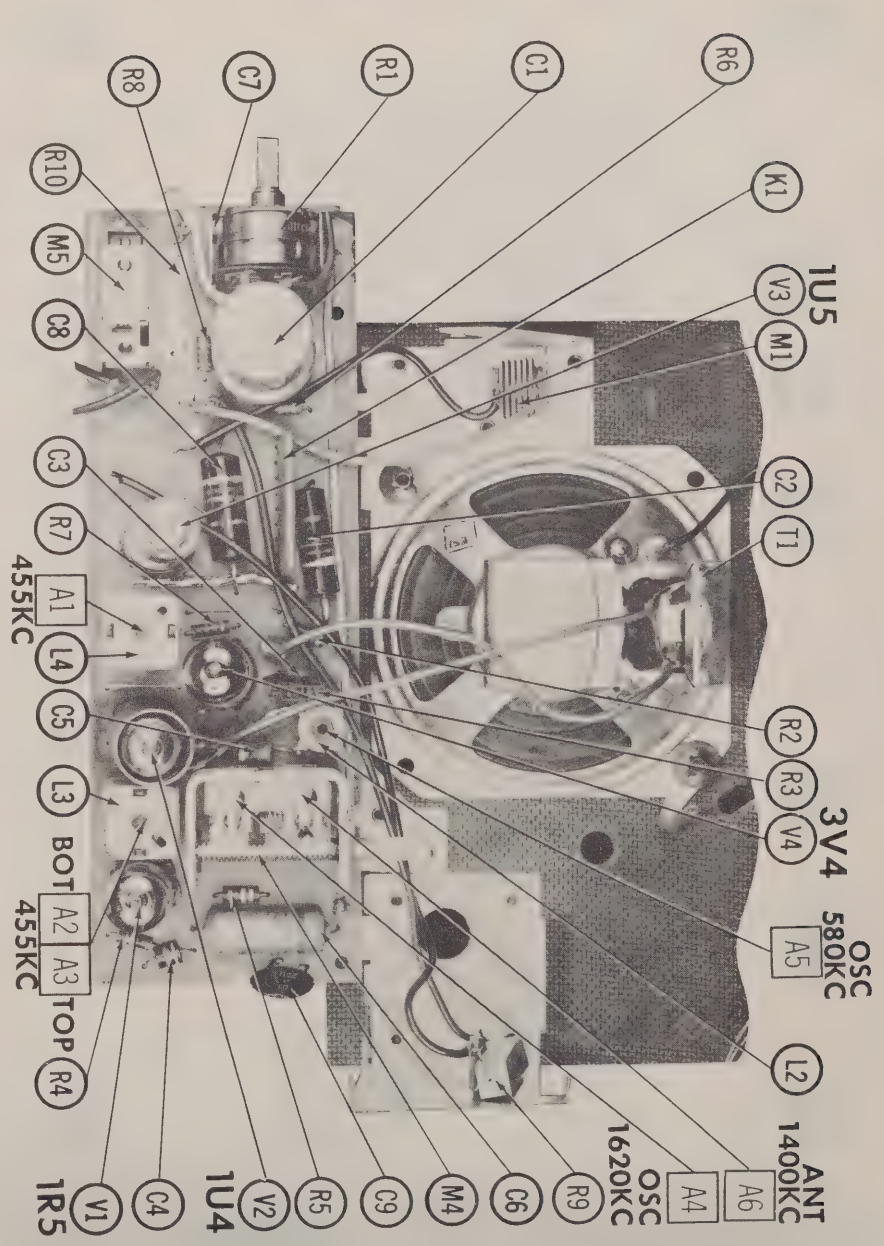
NAME	PART NO.	DESCRIPTION
Knob	54-6271-1	Tuning
Knob	54-6427-3	Off-On-Volume
Cabinet	11306-2	Aqua
Cabinet	11306	Pink And Ivory
Cabinet	11306-1	Red
Handle Kit	425-0043	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—TOP VIEW



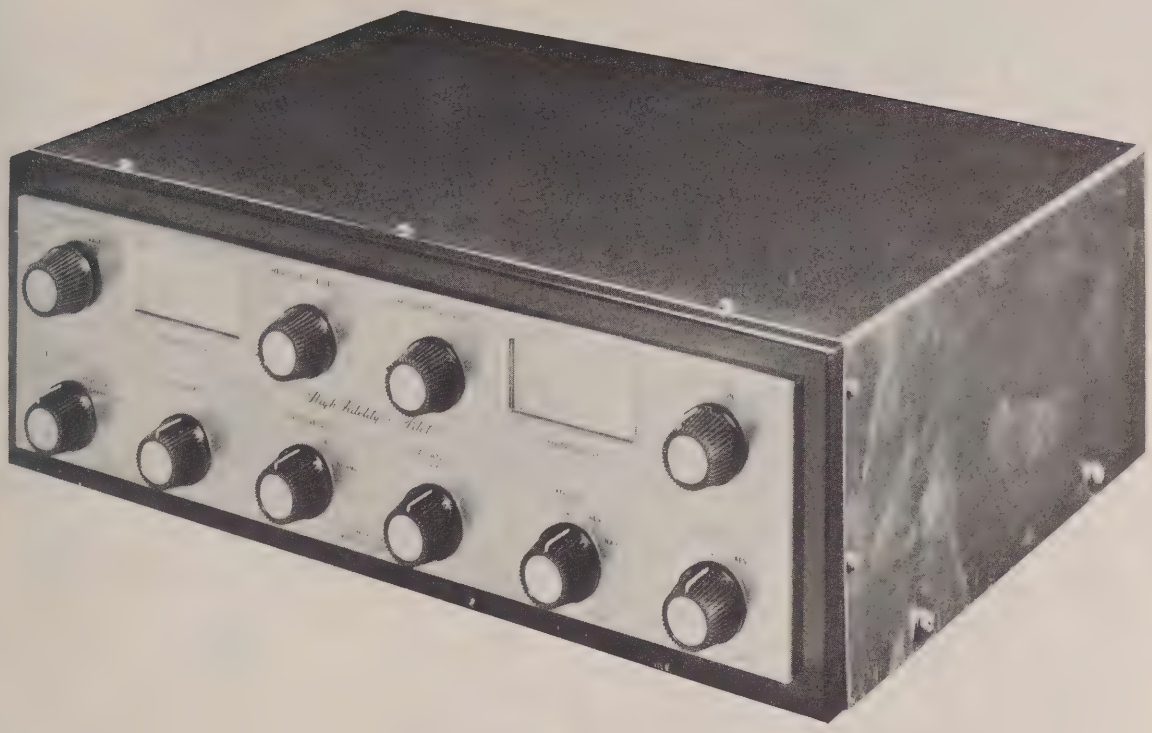
PHILCO MODEL G-681 (Code 124)

FOLDER 10

PHOTOFACT* Folder

*TRADE MARK

PILOT
MODEL SP-215



PILOT
MODEL SP-215

TRADE NAME	Pilot Model SP-215		
MANUFACTURER	Pilot Radio Corp., 37-06 36th Street, Long Island City 1, N. Y.		
TYPE SET	AC Operated Stereo Preamplifier		
TUBES	Nine		
POWER SUPPLY	105-120 Volts AC, 60 Cycles	RATING	42 Watts, .45 Amp. @ 117 Volts AC

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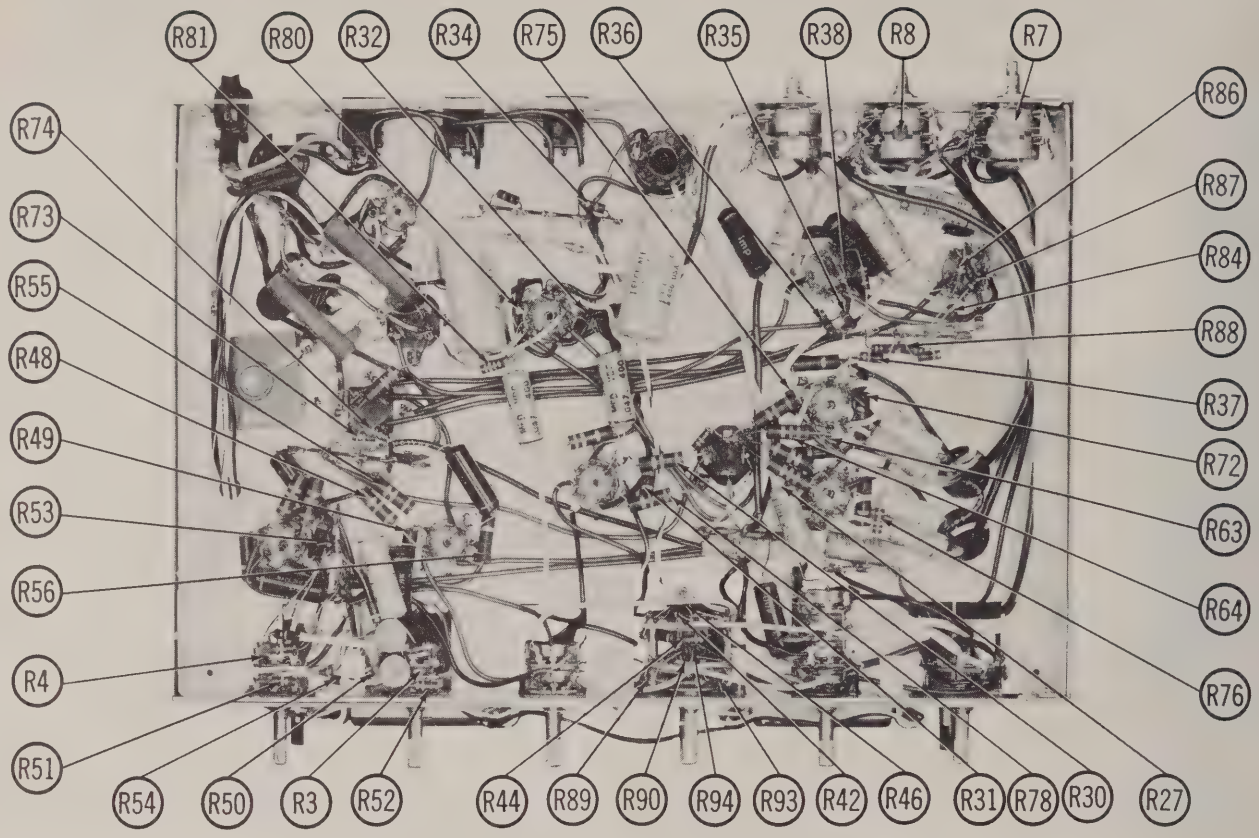
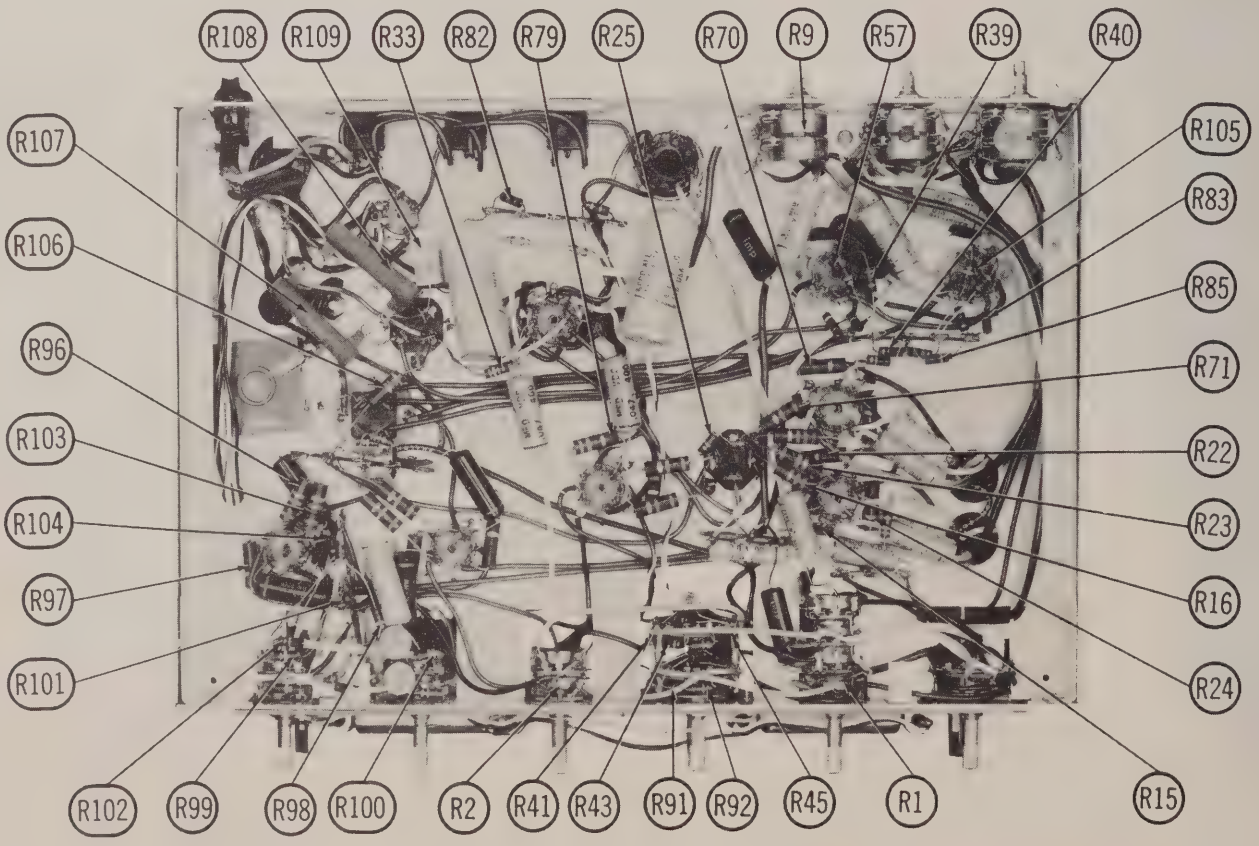
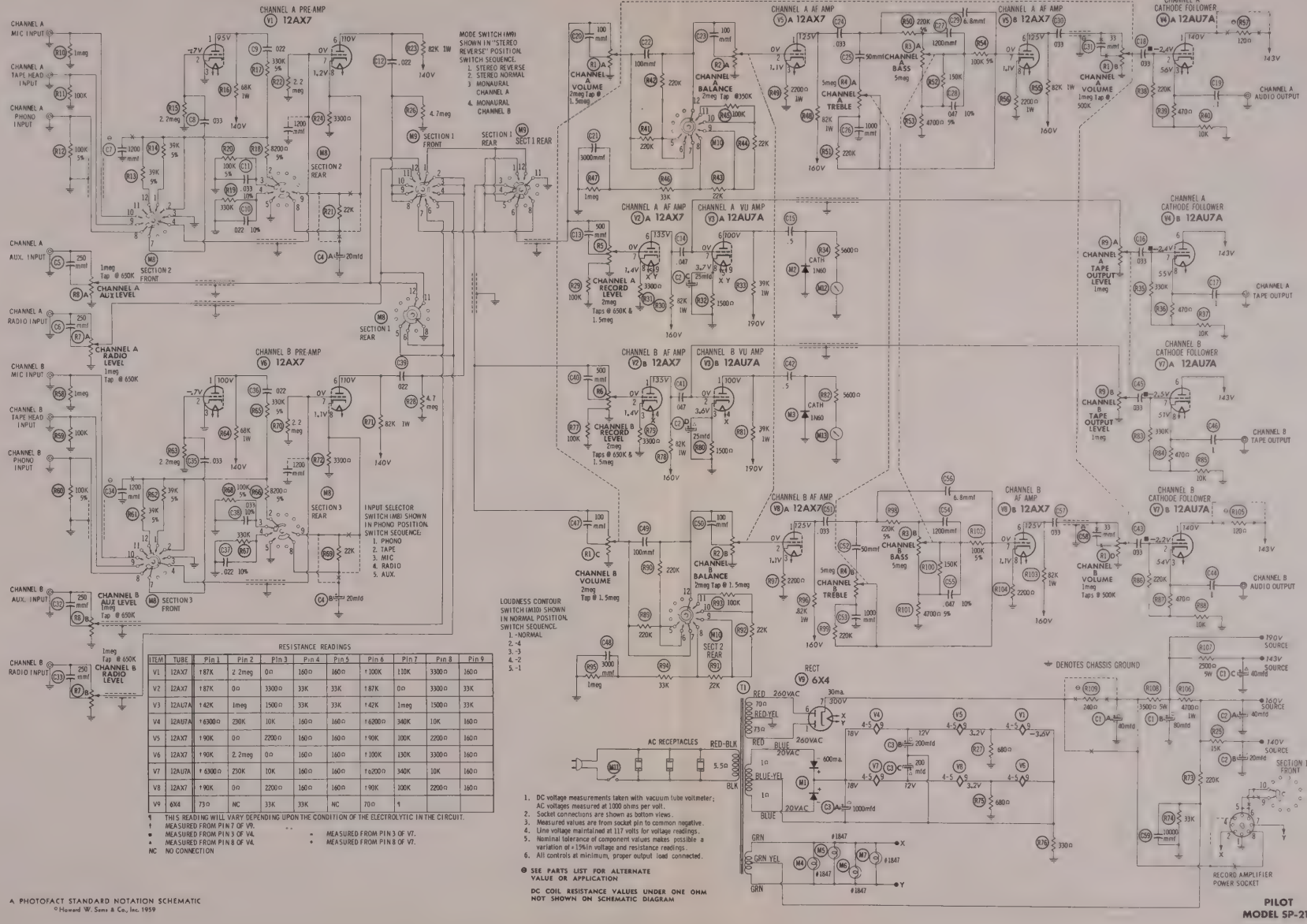




CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.


CHANNEL A PRE-AMP V1 12AX7
CHANNEL A MIC INPUT
CHANNEL A TAPE HEAD INPUT
CHANNEL A PHONO INPUT
CHANNEL A AUX. INPUT
CHANNEL A RADIO INPUT
CHANNEL A AUX LEVEL
CHANNEL A RADIO LEVEL
SECTION 1 FRONT
SECTION 1 REAR
SECTION 2 FRONT
SECTION 2 REAR
MODE SWITCH (M9) SHOWN IN "STEREO REVERSE" POSITION. SWITCH SEQUENCE. 1. STEREO REVERSE 2. STEREO NORMAL 3. MONAURAL CHANNEL A 4. MONAURAL CHANNEL B
CHANNEL B PRE-AMP V6 12AX7
CHANNEL B MIC INPUT
CHANNEL B TAPE HEAD INPUT
CHANNEL B PHONO INPUT
CHANNEL B AUX. INPUT
CHANNEL B RADIO INPUT
CHANNEL B AUX LEVEL
CHANNEL B RADIO LEVEL
SECTION 3 FRONT
SECTION 3 REAR
INPUT SELECTOR SWITCH (M8) SHOWN IN PHONO POSITION. SWITCH SEQUENCE: 1. PHONO 2. TAPE 3. MIC 4. RADIO 5. AUX.
CHANNEL A AF AMP V2 A 12AX7
CHANNEL A VU AMP V3 A 12AU7A
CHANNEL A AF AMP V5 A 12AX7
CHANNEL A AF AMP V5 B 12AX7
CHANNEL A VOLUME
CHANNEL BALANCE
CHANNEL A BASS
CHANNEL A TREBLE
CHANNEL A RECORD LEVEL
CHANNEL A CATHODE FOLLOWER V4 A 12AU7A
CHANNEL A CATHODE FOLLOWER V4 B 12AU7A
CHANNEL A TAPE OUTPUT LEVEL
CHANNEL A AUDIO OUTPUT
CHANNEL A TAPE OUTPUT
CHANNEL B AF AMP V7 B 12AX7
CHANNEL B VU AMP V3 B 12AU7A
CHANNEL B AF AMP V8 A 12AX7
CHANNEL B AF AMP V8 B 12AX7
CHANNEL B VOLUME
CHANNEL BALANCE
CHANNEL B BASS
CHANNEL B TREBLE
CHANNEL B RECORD LEVEL
CHANNEL B CATHODE FOLLOWER V7 A 12AU7A
CHANNEL B CATHODE FOLLOWER V7 B 12AU7A
CHANNEL B TAPE OUTPUT LEVEL
CHANNEL B AUDIO OUTPUT
CHANNEL B TAPE OUTPUT
LOUDNESS CONTOUR SWITCH (M10) SHOWN IN NORMAL POSITION. SWITCH SEQUENCE. 1. -NORMAL 2. -4 3. -3 4. -2 5. -1
SECT 2 REAR
RECT V9 6X4
AC RECEPTACLES
DENOTES CHASSIS GROUND
190V SOURCE
143V SOURCE
160V SOURCE
140V SOURCE
SECTION 1 FRONT
RECORD AMPLIFIER POWER SOCKET

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†87K	2.2meg	0Ω	160Ω	160Ω	†100K	110K	3300Ω	160Ω
V2	12AX7	†87K	0Ω	3300Ω	33K	33K	†87K	0Ω	3300Ω	33K
V3	12AU7A	†42K	1meg	1500Ω	33K	33K	†42K	1meg	1500Ω	33K
V4	12AU7A	†6300Ω	230K	10K	160Ω	160Ω	†6200Ω	340K	10K	160Ω
V5	12AX7	†90K	0Ω	2200Ω	160Ω	160Ω	†90K	100K	2200Ω	160Ω
V6	12AX7	†90K	2.2meg	0Ω	160Ω	160Ω	†100K	130K	3300Ω	160Ω
V7	12AU7A	†6300Ω	230K	10K	160Ω	160Ω	†6200Ω	340K	10K	160Ω
V8	12AX7	†90K	0Ω	2200Ω	160Ω	160Ω	†90K	100K	2200Ω	160Ω
V9	6X4	73Ω	NC	33K	33K	NC	70Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V9.
▪ MEASURED FROM PIN 3 OF V4. ▫ MEASURED FROM PIN 3 OF V7.
• MEASURED FROM PIN 8 OF V4. ◦ MEASURED FROM PIN 8 OF V7.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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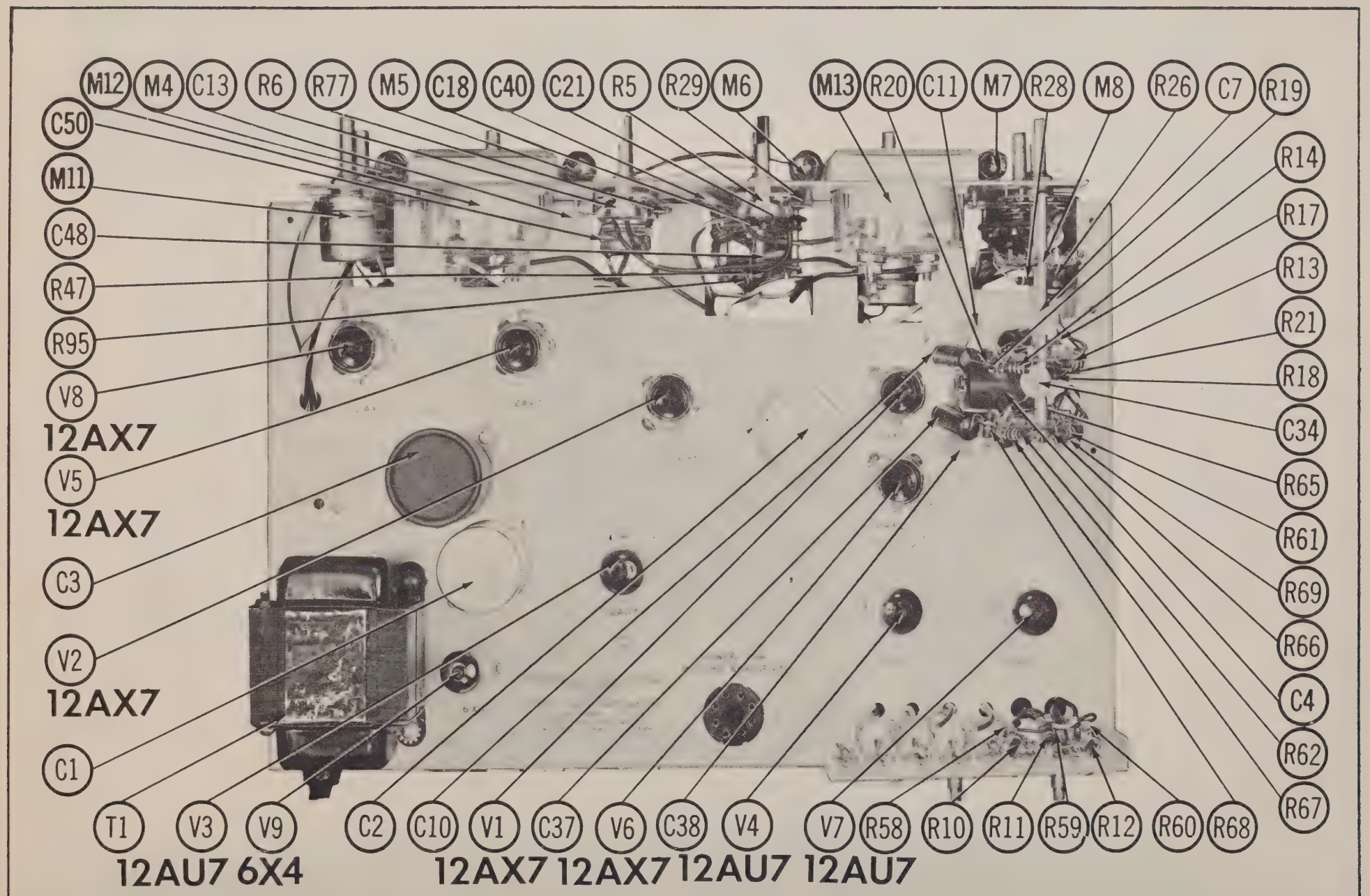
PILOT MODEL SP-215



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Channel A Preamplifier	12AX7	
V2	Channel A AF Amplifier- Channel B AF Amplifier	12AX7	
V3	Channel A VU Amplifier Channel B VU Amplifier	12AU7A	
V4	Channel A Cath. Follower	12AU7A	
V5	Channel A AF Amplifier	12AX7	
V6	Channel B Preamplifier	12AX7	
V7	Channel B Cath. Follower	12AU7A	
V8	Channel B AF Amplifier	12AX7	
V9	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PILOT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	300	24-164		C0194	FP227.5	TMT-39	T-108	TVL-3583
B	■80	300				TC78	TD-60-350	MT-4540	
C	▲40	300							
C2A	▲40	300	24-169	AFH4-44	D0367	FP345.3	TMQ-56	Q-210	R2728 *
B	■20	300				TT10X25			
C	25	10							
D	▲25	10							
C3A	▲1000	25	24-162						R2729 *
B	■200	25							
C	▲200	25							
C4A	20	10	24-138	PRS25V2020	BBRD2202	TCD45	TDLD-3	MTD-0220	TVA-2428
B	20	10							

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PILOT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	250			DI-00025	DD-251	L10T25	UC-5325	5GA-T25	
C6	250			DI-00025	DD-251	L10T25	UC-5325	5GA-T25	
C7	1200			DI-0012	DD-122	L10D12	UC-5212	5GA-D12	①
C8	.033	400		P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C9	.022	400		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C10	.022	400						5BF-S22	10%
C11	.033	400						5BF-S33	10%
C12	.022	400		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C13	500			DI-0005	DD-501	L10T5	UC-535	5GA-T5	
C14	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C15	.5	400		P488N-5		CUB4P5	GEM-405	4TM-P5	
C16	.033	400		P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C17	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C18	.033	400		P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C19	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C20	100			DI-0001	DD-101	L10T1	UC-531	5GA-T1	
C21	3000			DI-003	DD-302	L10D3	UC-523	5HK-D3	
C22	100			DI-0001	DD-101	L10T1	UC-531	5GA-T1	
C23	100			DI-0001	DD-101	L10T1	UC-531	5GA-T1	
C24	.033	200		P288N-033	DF-303	CUB2S33	GEM-4133	2TM-S33	
C25	50			DI-00005	DD-500	L10Q5	UC-545	5GA-Q5	
C26	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C27	1200			DI-0012	DD-122	L10D12	UC-5212	5GA-D12	
C28	.047	400						5BF-S47	10%
C29	6.8			NPO-SI 6.8	TCZ-6R8	CTA6V68C	ZT-5568	5TCCB-V68	
C30	.033	400		P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C31	33			DI-000033	DD-330	L10Q33	UC-5433	5GA-Q33	①
C32	250			DI-00025	DD-251	L10T25	UC-5325	5GA-T25	
C33	250			DI-00025	DD-251	L10T25	UC-5325	5GA-T25	
C34	1200			DI-0012	DD-122	L10D12	UC-5212	5GA-D12	①
C35	.033	400		P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C36	.022	400		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C37	.022	400						5BF-S22	10%

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PILOT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C38	.033	400						5BF-S33	10%
C39	.022	400		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C40	500			DI-0005	DD-501	L10T5	UC-535	5GA-T5	
C41	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C42	.5	400		P488N-5		CUB4P5	GEM-405	4TM-P5	
C43	.033	400		P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C44	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C45	.033	400		P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C46	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C47	100			DI-0001	DD-101	L10T1	UC-531	5GA-T1	
C48	3000			DI-003	DD-302	L10D3	UC-523	5HK-D3	
C49	100			DI-0001	DD-101	L10T1	UC-531	5GA-T1	
C50	100			DI-0001	DD-101	L10T1	UC-531	5GA-T1	
C51	.033	200		P288N-033	DF-303	CUB2S33	GEM-4133	2TM-S33	
C52	50			DI-00005	DD-500	L10Q5	UC-545	5GA-Q5	
C53	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C54	1200			DI-0012	DD-122	L10D12	UC-5212	5GA-D12	
C55	.047	400						5BF-S47	10%
C56	6.8			NPO-SI 6.8	TCZ-6R8	CTA6V68C	ZT-5568	5TCCB-V68	
C57	.033	400		P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C58	33			DI-000033	DD-330	L10Q33	UC-5433	5GA-Q33	①
C59	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	

① Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PILOT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	36-69					Volume, Tap ② 1.5meg
B	1meg	½						Volume, Tap ② 500K
C	2meg	½						Volume, Tap ② 1.5meg
D	1meg	½						Volume, Tap ② 500K
R2A	2meg	½	39-53					Balance, Tap ② 350K
B	2meg	½						Balance, Tap ② 1.5meg
R3A	5meg	½	37-37			Q13-141		Bass
B	5meg	½				M13-141		Bass
R4A	5meg	½	37-37			Q13-141		Treble
B	5meg	½				M13-141		Treble
R5	2meg	½	39-55					Record Level Channel A Tap ② 650K & 1.5meg
R6	2meg	½	39-55					Record Level Channel B Tap ② 650K & 1.5meg
R7A	1meg	½	39-54				■ UE3904	Radio Level Ch. A Tap ② 650K
B	1meg	½						Radio Level Ch. B Tap ② 650K
R8A	1meg	½	39-54				■ UE3904	Aux Level Ch. A Tap ② 650K
B	1meg	½						Aux Level Ch. B Tap ② 650K
R9A	1meg	½	39-56	BB-108	AD47-1meg-S	Q11-137		Tape Output Level
B	1meg	½		Not Req.	Not Req.	M11-137		Tape Output Level
C	Shaft			Not Req.	RS-2 †	PQ †		

■ "STA-LOC" Equivalent: FB16T55, OK500, RU16T654, IK750.
† Saw off shaft and saw or file slot in tip end to match original shaft.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	PILOT PART No.	NOTES
R10	1meg			
R11	100K			
R12	100K 5%			
R13	39K 5%			
R14	39K 5%			
R15	2.2meg			
R16	68K	1		
R17	330K 5%			
R18	8200Ω 5%			
R19	330K			
R20	100K 5%			
R21	22K			
R22	2.2meg			
R23	82K	1		

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	PILOT PART No.	NOTES
R24	3300Ω			
R25	15K			
R26	4.7meg			
R27	680Ω			
R28	4.7meg			
R29	100K			
R30	82K	1		
R31	3300Ω			
R32	1500Ω			
R33	39K	1		
R34	5600Ω			
R35	330K			
R36	470Ω			
R37	10K			
R38	220K			
R39	470Ω			
R40	10K			
R41	220K			
R42	220K			
R43	22K			
R44	22K			
R45	100K			
R46	33K			
R47	1meg			
R48	82K	1		
R49	2200Ω	1		
R50	220K 5%			
R51	220K			
R52	150K			
R53	4700Ω 5%			
R54	100K 5%			
R55	82K	1		
R56	2200Ω	1		
R57	120Ω			Note 1
R58	1meg			
R59	100K			
R60	100K 5%			
R61	39K 5%			
R62	39K 5%			
R63	2.2meg			
R64	68K	1		
R65	330K 5%			
R66	8200Ω 5%			

ITEM No.	RATING OHMS	RATING WATT	PILOT PART No.	NOTES
R67	330K			
R68	100K 5%			
R69	22K			
R70	2.2meg			
R71	82K	1		
R72	3300Ω			
R73	220K			
R74	33K			
R75	680Ω			
R76	330Ω			
R77	100K			
R78	82K	1		
R79	3300Ω			
R80	1500Ω			
R81	39K	1		
R82	5600Ω			
R83	330K			
R84	470Ω			
R85	10K			
R86	220K			
R87	470Ω			
R88	10K			
R89	220K			
R90	220K			
R91	22K			
R92	22K			
R93	100K			
R94	33K			
R95	1meg			
R96	82K	1		
R97	8200Ω			
R98	220K 5%			
R99	220K			
R100	150K			
R101	4700Ω 5%			
R102	100K 5%			
R103	82K	1		
R104	2200Ω			
R105	120Ω			Note 1
R106	4700Ω	1		
R107	2500Ω	5	31-173	
R108	3500Ω	5	31-170	
R109	240Ω			Note 1

Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA PILOT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .45A	500VCT @ .030A	6.3VCT @ 1.5A	55-62						
	SEC. 3	SEC. 4	SEC. 5							
	38VCT @ .6A									

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA PILOT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.600A	110-564			4N33-1C1-RV	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA PILOT PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M2	1N60	110-384	1N60	1N295	VU Level Rectifier (Pigtail)
M3	1N60	110-384	1N60	1N295	VU Level Rectifier (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	PILOT PART No.	NOTES
M4	Lamp	68-10	#1847
M5	Lamp	68-10	#1847
M6	Lamp	68-10	#1847
M7	Lamp	68-10	#1847
M8	Switch	100-130	Input Selector, Rotary, Wafer Type
M9	Switch	100-129	Mode, Rotary, Wafer Type
M10	Switch	100-126	Loudness Contour, Rotary, Wafer Type
M11	Switch	100-128	Power On-Off, Rotary, Snap Type
M12	Meter	110-565	VU Level Indicator (Channel A)
M13	Meter	110-565	VU Level Indicator (Channel B)

WIRING DATA

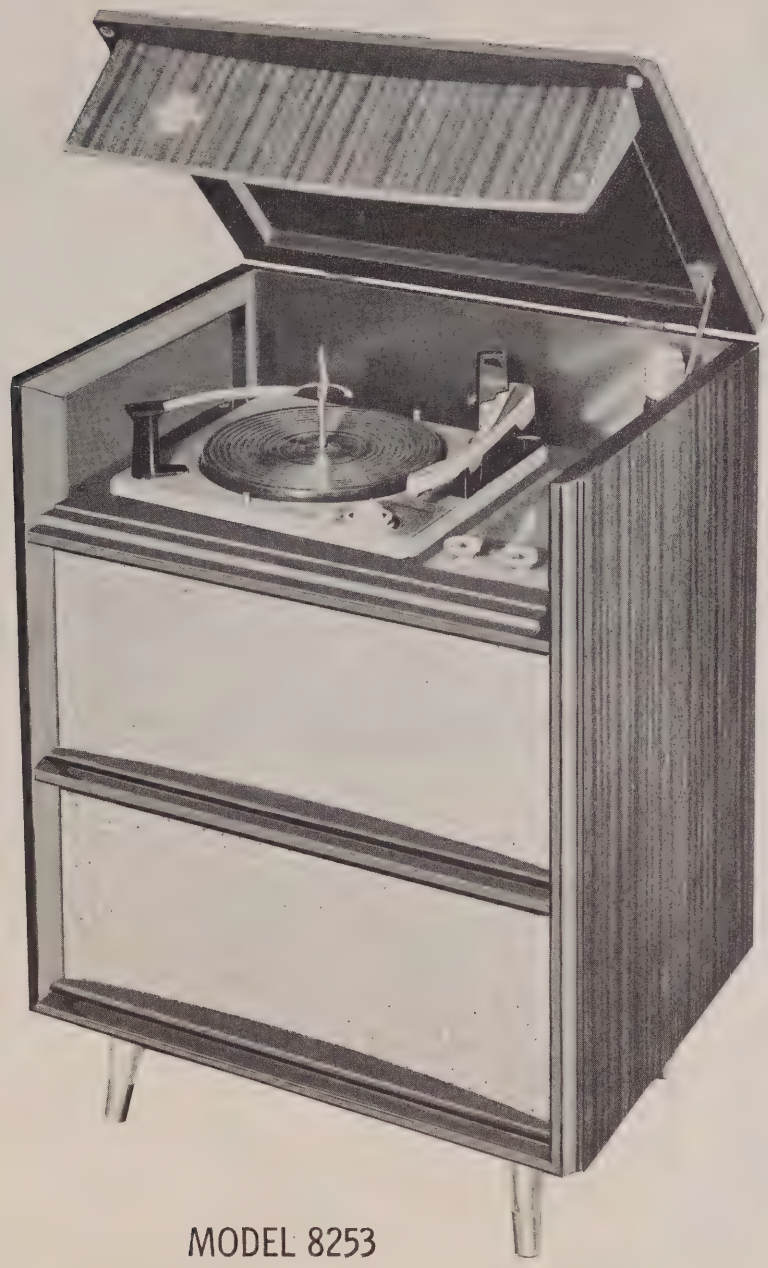
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

SILVERTONE MODELS 8253, 8254, 9248, 9249 (Ch. 528.59110)

SILVERTONE MODELS 8253, 8254, 9248, 9249 (Ch. 528.59110)



MODEL 8253

SILVERTONE MODELS 8253, 8254, 9248, 9249 (Ch. 528.59110)

TRADE NAME	Silvertone Models 8253, 8254, 9248, 9249 (Ch. 528.59110)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES	Four
POWER SUPPLY	110 - 120 Volts AC - 60 Cycles RATING 58 Watts, .59 Amp. @117 Volts AC

RECORD CHANGER 528.56120 USED IN MODELS 8253, 8254.
RECORD CHANGER 528.56300 USED IN MODELS 9248, 9249.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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H823

DATE 3-59

SET 434 FOLDER 12

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. - Phase Inv.	12AX7	
V2	Output	6V6GT	
V3	Output	6V6GT	
V4	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	300	18-31-3	AFH3-44	C0350	FP377	TMT-40	T-102	TVL-3787
B	40	300							
C	40	300							
C2	4	150 NP	18-9-5	NP-PRS450V4	BBR8-150 † BBR8-150	TC510	TD-8-150 † TD-8-150	MT-1508 † MT-1508	TVAS-1401*

† Connect negative leads together.
* Not normally in distributors stock. Available through distributors on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.047	400	16-47343	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C4	.047	400	16-47343	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C5	1000	6000	15-10226	HVD-15-1000	DD-102	BYA10D1M	B-210	10HK-D1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	2.2meg	½	24-293-0					Loudness, Taps @ 500K & 1meg
R2	500K	½	24-159-2					Treble
R3	5meg	½	24-166-2					Bass

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SILVERTONE PART No.	NOTES
R4	100K		60-10401	
R5	220K		60-22401	
R6	3900Ω		60-39201	
R7	12K		60-12301	
R8	220K		60-22401	
R9	470K		60-47401	
R10	120Ω	2	60-12121	
R11	470K		60-47401	
R12	470Ω	1	60-47112	
R13	100K		60-10401	

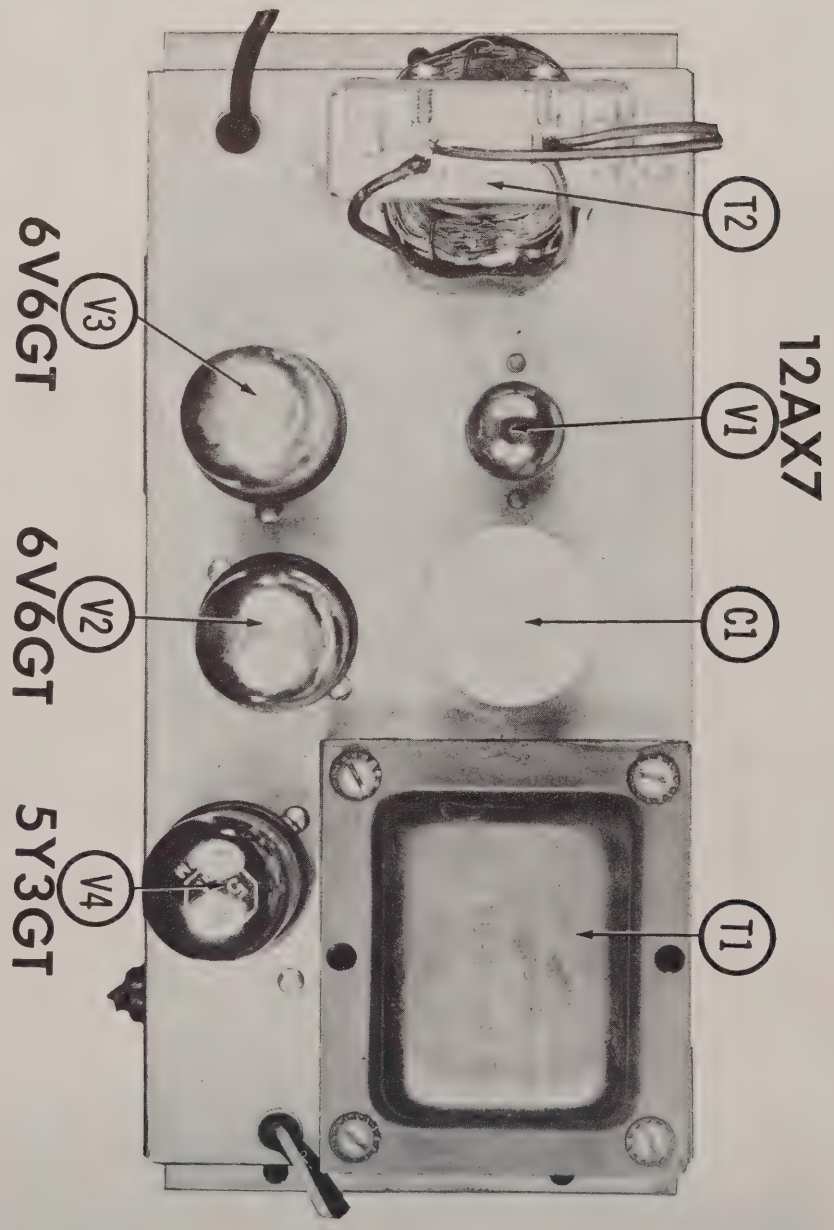
TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .59A	500 VCT @ .100A	5V @ 1.9A	6.3V @ 1.15A			80-10-0	P9207			PM8404	24R13	R-10B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6700Ω	6-8Ω	80-49-1	Z1011	A-2905 ①	AU-606	A-3870		S-55X	① Drill new mounting hole

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	33-282-4 ①	12A6PA	① Used in Models 8253, 8254
SP2	5"	PM	3-4Ω	33-283-4 ①	5A1TRZ4.6	② Used in Models 9248, 9249
	5"	PM	3-4Ω	33-304-4 ②	5A1	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Tone Compensation	18mmf, 27mmf, 820mmf, 3000mmf, 4700mmf, 47K, 68K, 330K	13-18-3	Sprague TCS-14

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		53-T	GD-J			Models 8253, 8254
	33-300-0	13-TB or 13-TBX				Models 9248, 9249

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	
M2		† S-66 or †♦ S-66SD or ♦ S-66D	† W-75TPS or †♦ W-75DS or ♦ W-75TPD	Models 8253, 8254
	83-1252 (LP)	† E-98 or ♦ E-98D		Models 9248, 9249
	83-1250 (78)	† E-98X or ♦ E-98XD		

† Jewel
♦ Diamond

CABINETS & CABINET PARTS

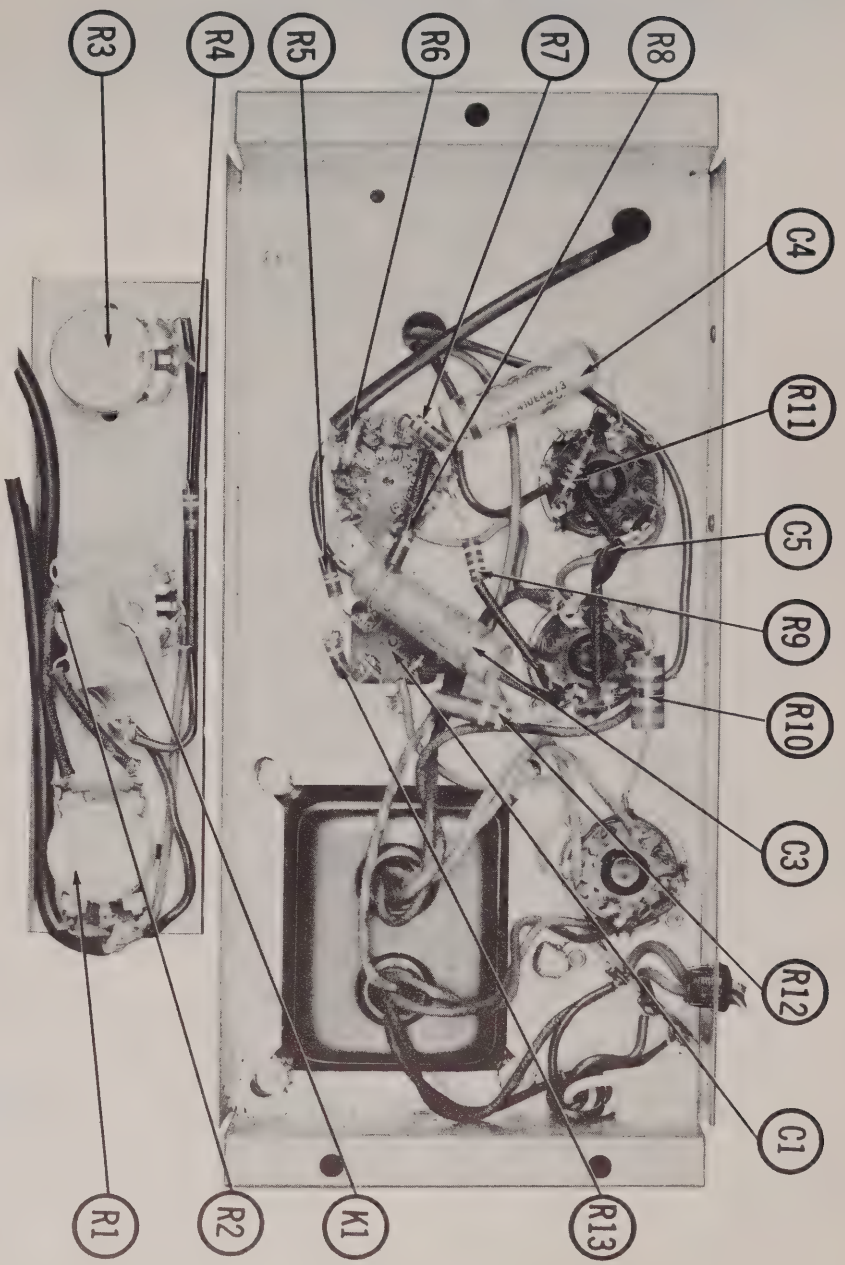
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

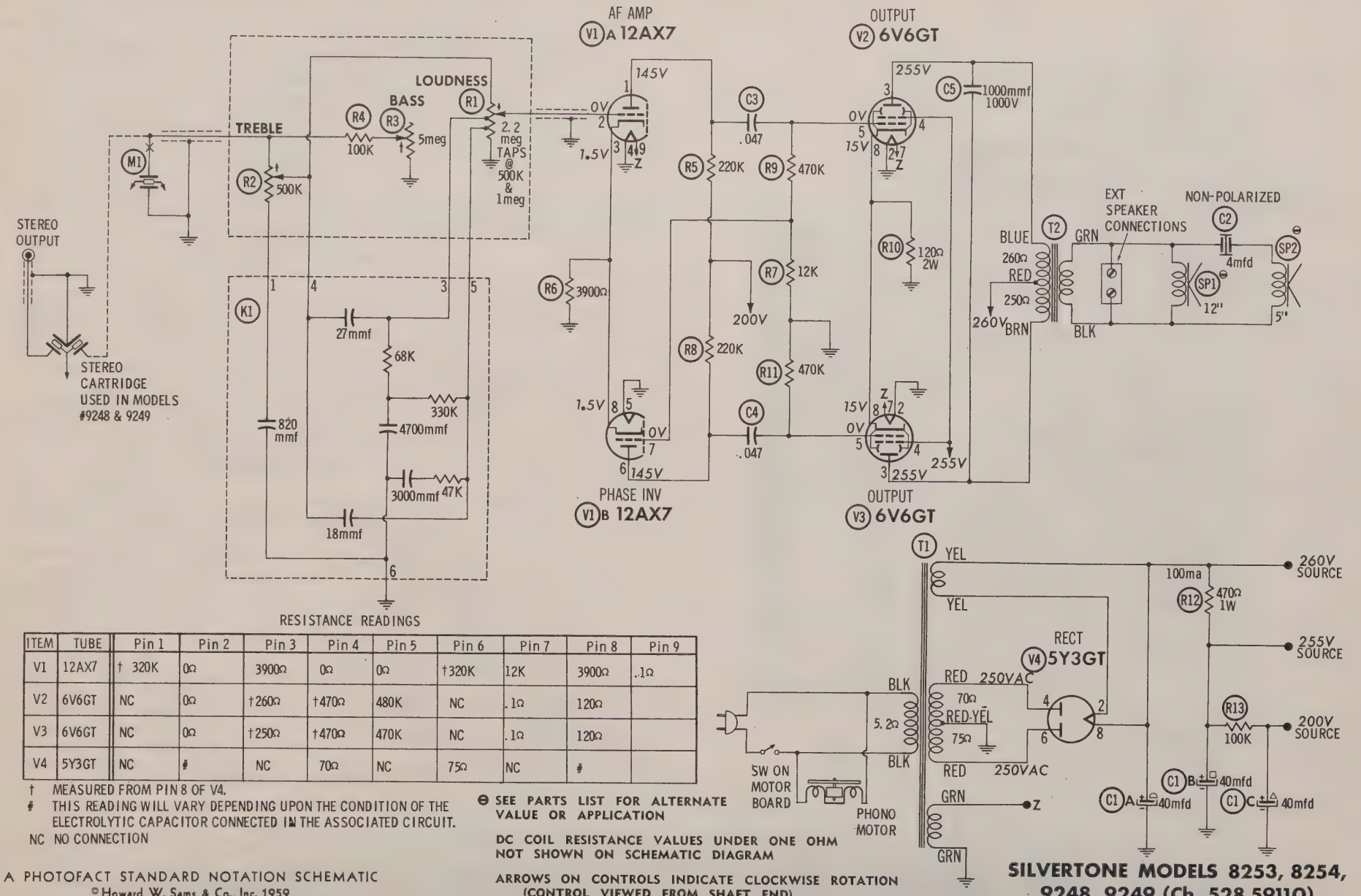
NAME	PART NO.	DESCRIPTION
Knob	52-834-0	3 Used
Cabinet	42-55-2	Model 8253
Cabinet	42-56-2	Model 8254
Cabinet	42-67-2	Model 9248
Cabinet	42-68-2	Model 9249
Legs	49-252	Models 8253, 9248
Legs	49-253	Models 8254, 9249

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	† 320K	0Ω	3900Ω	0Ω	0Ω	†320K	12K	3900Ω	.1Ω
V2	6V6GT	NC	0Ω	†260Ω	†470Ω	480K	NC	.1Ω	120Ω	
V3	6V6GT	NC	0Ω	†250Ω	†470Ω	470K	NC	.1Ω	120Ω	
V4	5Y3GT	NC	#	NC	70Ω	NC	75Ω	NC	#	

† MEASURED FROM PIN 8 OF V4.

THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

NC NO CONNECTION

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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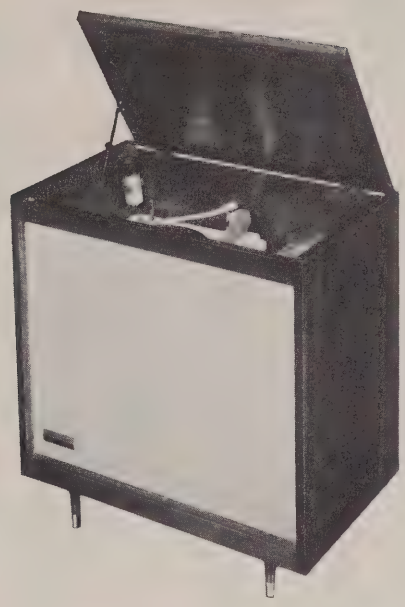
SILVERTONE MODELS 8253, 8254, 9248, 9249 (Ch. 528.59110)

PHOTOFACT* Folder



TRADE NAME	Steelman Model 4AR12
MANUFACTURER	Steelman Phono & Radio Co., Inc., 2-30 Anderson Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated AM Receiver With 4 Speed Automatic Record Changer
TUBES	Five
POWER SUPPLY	110-120 Volts AC - 60 Cycles
RATING	23 Watts, .24 Amp. @ 117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	535 - 1620KC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #300035 - SEE V-M 1200A - PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10.

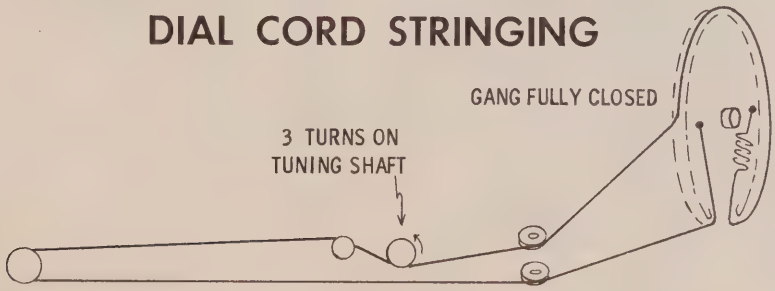
ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	Highside to antenna Stator lug of tuning gang. Low side to B_T	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	"	"	1600KC	1600KC	"	A5	"
3.		Loop	1400KC	Tune for 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

DIAL CORD STRINGING



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H777

STEELMAN
MODEL 4AR12

STEELMAN
MODEL 4AR12

SET 434 FOLDER 13

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	583018	PRS150V804	BBRT84215	TCT3117	TDLT-7	FMT-339	TVA-3455
B	40	150							
C	20	150							
C2	10	50		PRS50V10	BBR10-50	TT50X10	TD-10-50	MT-0510	TVA-1304

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	10			SI10	D6-100	LT6Q1	UC-541	5GA-Q1	
C4	.05	200		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C5	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C6	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C7	.25	200		P288N-25		CUB2P25	GEM-2025	2TM-P25	
C8	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C9	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STEELMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	361881	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		STEELMAN PART No.	NOTES
	OHMS	WATT		
R2	22K			①
R3	2.2meg			
R4	220Ω			
R5	1000Ω			
R6	3900Ω			
R7	3900Ω			

① Some versions may use 150Ω in this application.

ITEM No.	RATING		STEELMAN PART No.	NOTES
	OHMS	WATT		
R8	27K			②
R9	150Ω			
R10	22Ω			
R11	330Ω	1		
R12	2200Ω	1		

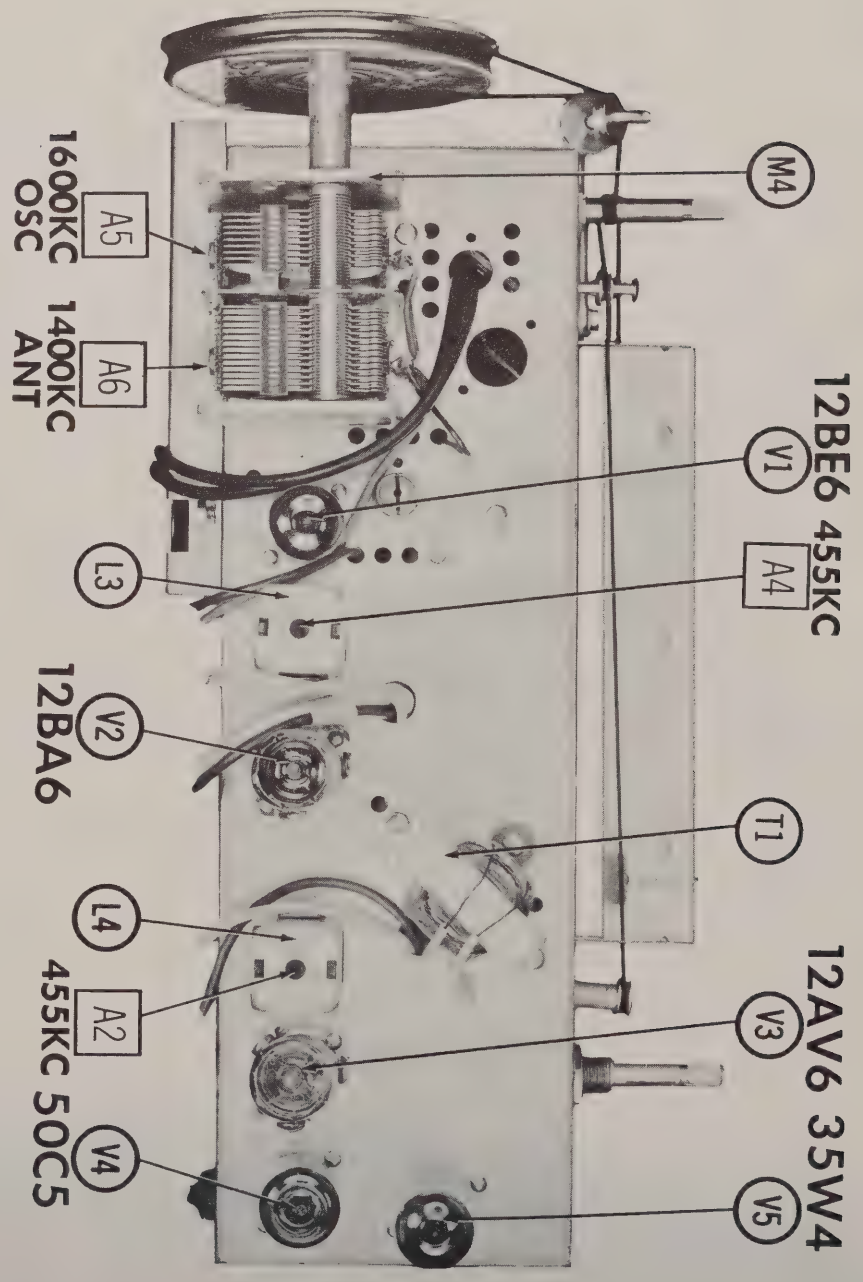
② Some versions may use 15K in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		STEELMAN PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop. Ant.	460033					
L2	Osc. Coil	455064		BC-393①			
L3	Input IF	450023	16-6758	BC-352	12-C1	RF-1	
L4	Output IF	450023	16-6758	BC-353	12-C2	RF-2	

① Drill new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	STEELMAN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω	1-2Ω	430241	Z1001 ①	A-2902①	AU-604①	A-3849①	24S64 ①		① Drill new mounting hole

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	12"	PM	3-4Ω	409004	12A6A	① Not used in some versions
SP2	4"	PM	3-4Ω	404006	4A07	
SP3	4"	PM	3-4Ω	404006 ①	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	STEELMAN PART No.	REPLACEMENT DATA
K1	Audio Coupling Circuit	250mmf, 220mmf 5000mmf, 5000mmf, 470K, 470K, 6.8meg	420006	Aerovox PA-113-2 Centralab PC-151 Cornell-Dubilier 116TM2 Sprague DT-2

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	STEELMAN PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	329517	118-TS	N8-1 and N8-3			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	STEELMAN PART No.	JENSEN PART No.	WALCO PART No.	
M2	322307 (78)	† CRA-55 or ♦ CRA-55D	† W-64S or ♦ W-64D	† Jewel ♦ Diamond
	322107 (LP)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M3	Lamp	355001	#47
M4	Tuning Cap.	590046	2 Section, Ant. 14-486mmf, Osc. 9-162mmf
M5	Switch		Bass-Treble, 3P4T, Slide Type
M6	Switch		Phono-Radio, 3PDT, Slide Type

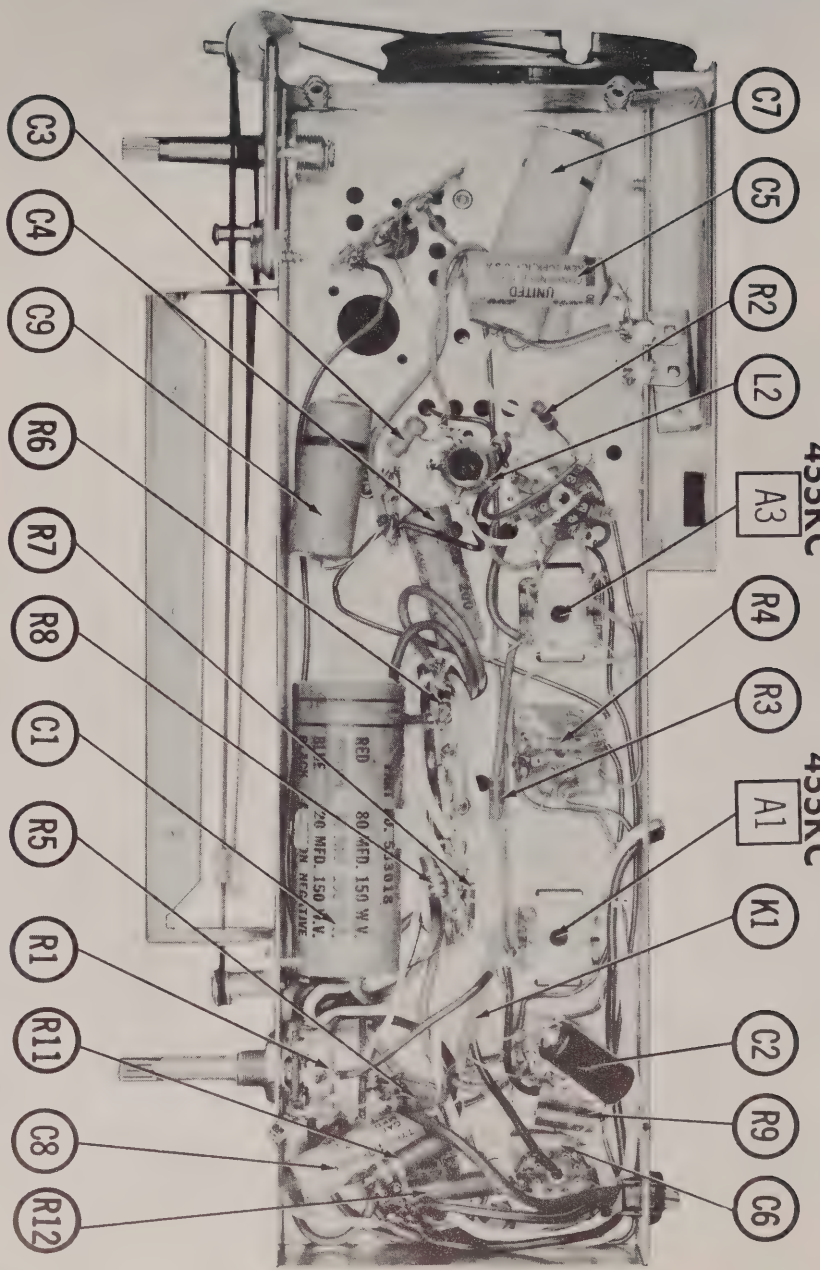
CABINETS & CABINET PARTS

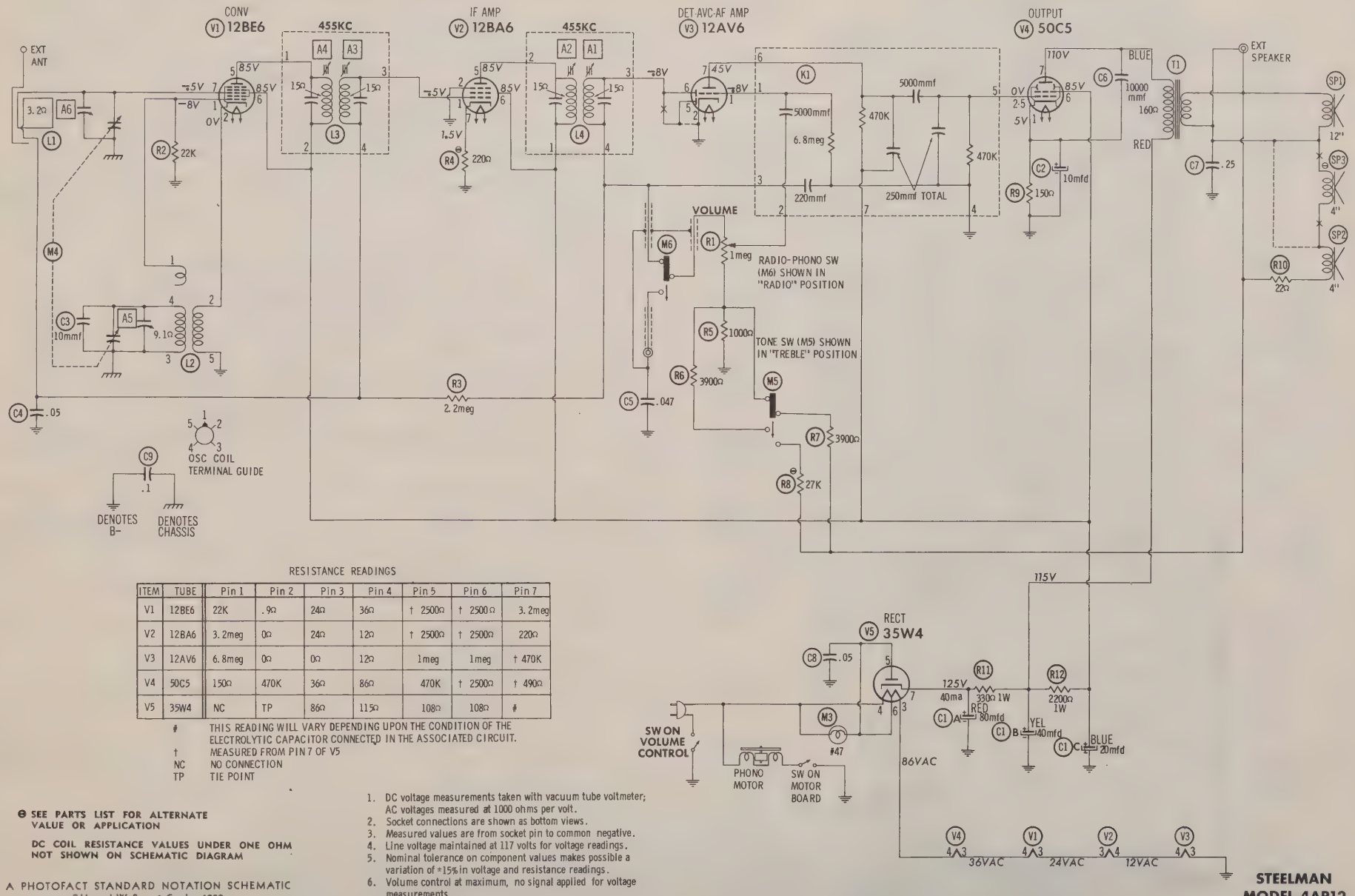
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.9Ω	24Ω	36Ω	† 2500Ω	† 2500Ω	3.2meg
V2	12BA6	3.2meg	0Ω	24Ω	12Ω	† 2500Ω	† 2500Ω	220Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	1meg	1meg	† 470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	† 2500Ω	† 490Ω
V5	35W4	NC	TP	86Ω	115Ω	108Ω	108Ω	#

\# THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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STEELMAN MODEL 4AR12

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SYMPHONIC MODELS 1233, 1256, 1257, 1267

SYMPHONIC MODELS
1233, 1256, 1257, 1267

MODEL 1233

SYMPHONIC MODELS
1233, 1256, 1257, 1267

TRADE NAME	Symphonic Models 1233, 1256, 1257, 1267
MANUFACTURER	Symphonic Radio & Electronics Corp., 235 Jersey Ave., New Brunswick, N. J.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Manual Record Player (Models 1256, 1257, 1267 are 4 Speed Automatic Record Changers)
TYPES	Three
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING 40 Watts, .44 Amp. @117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER USED IN MODELS 1256, 1257 - SEE SIMILAR V-M 1200A - PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10.

FOR SERVICE INFORMATION ON RECORD CHANGER USED IN MODEL 1267 - SEE SIMILAR MONARCH UA8 - PHOTOFACT SET 381 FOLDER 11.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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H821

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1 V2	AF Amplifier Output	12AU6 50L6GT	Note 1

ITEM No.	USE	TYPE	NOTES
V3	Rectifier	35W4	

Note 1. Some versions may use type 12BA6 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Symphonic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150	CE-101 ①	PR3-030	BBRT84215			FMT-339	TVLS-3442-9*
B	40	150							
C	20	150							

① Model 1233 may use 40-30-20mfd in this application. (Part #CE-100)
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Symphonic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	400	CP-200	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C3	220		CC-114	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C4	.25	200	CP-100	P288N-25		CUB2P25	GEM-2025	2TM-P25	
C5	5000		CC-104	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C6	.047	400	CP-200	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	Symphonic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	VC-195 ①	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R2A	1meg	½	VC-112 ②	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	3meg	½	VC-147 ③	B-85	A47-3meg-Z	Q13-140	U57	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Use KR-1 with CRL "Red Label" controls and KB-1 with "Blue Label" controls.
① Part #VC-171 (less switch) used in models 1256, 1257 & 1267.
② Alternate Part #VC-142. Part #VC-171 used in model 1267.
③ Part #VC-172 used in models 1256, 1257 & 1267.

RESISTORS

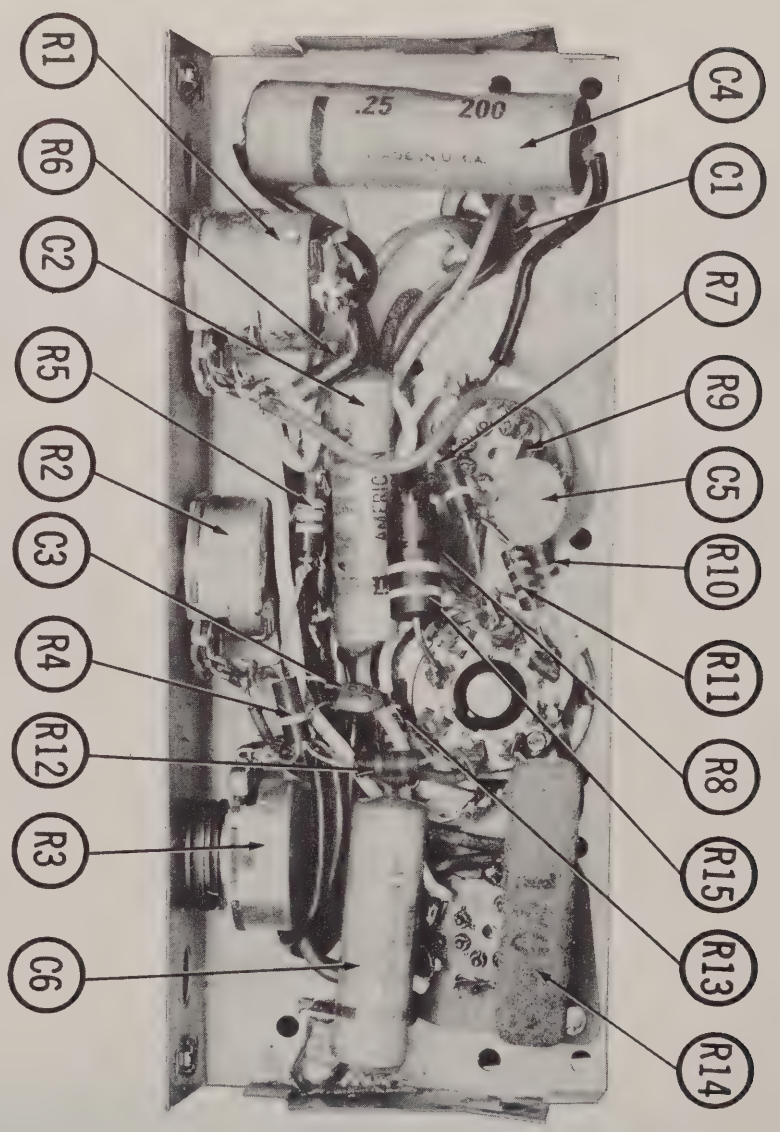
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Symphonic PART No.	NOTES
	OHMS	WATT		
R4	220K		RC-113	Note 1
R5	33K		RC-100	
R6	1meg		RC-102	Note 2
R7	220K		RC-113	
R8	1meg		RC-102	
R9	1000Ω		RC-114	

ITEM No.	RATING		Symphonic PART No.	NOTES
	OHMS	WATT		
R10	8200Ω		RC-237	
R11	470K		RC-118	
R12	150Ω		RC-214	Note 3
R13	4700Ω		RC-200	
R14	220Ω	7	RW-400	
R15	47Ω	2	RC-600	Note 2

Note 1. Models 1256, 1257, & 1267 use 100K in this application (Part #RC-225).
Note 2. Not used in some versions.
Note 3. Some versions may use 180Ω in this application (Part #RC-247).

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (cont)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Symphonic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2000Ω	65Ω SEC 2 6-8Ω Turns Ratio SEC 1	TR-120							
	5.5	: 1								

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA Symphonic PART No.	QUAM PART No.	NOTES
SP1	5 1/4"	PM	3-4Ω	SP-605 ①	52A21	① Used in Models 1233, 1256, 1267
SP2	5 1/4"	PM	3-4Ω	SP-605 ①	52A21	② Used in Model 1267 only.
	8"	PM	3-4Ω	SP-804 ②	8A31PAZ3-4	
	8"	PM	3-4Ω	SP-804 ②	8A31PAZ3-4	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA Symphonic PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M1		BR-312-TS	N8-1 and N8-3			Model 1233
		118-TS	N8-1 and N8-3			Models 1256, 1257
		310-TB *B310-T	N8-1 and N8-3			Model 1267 * Tone Arm Complete With Cartridge.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

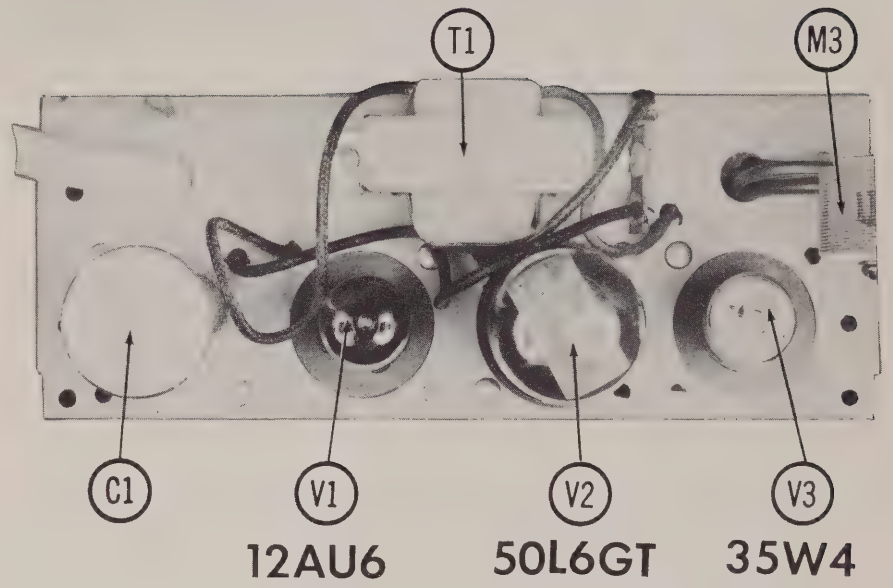
ITEM No.	REPLACEMENT DATA Symphonic PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2	(78)	† CRA-55 or ♦ CRA-55D	† W-64S or ♦ W-64D	Model 1233
	(LP)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	
	(78)	† CRA-55 or ♦ CRA-55D	† W-64S or ♦ W-64D	Models 1256, 1257
	(LP)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	
	(78)	† CRA-55 or ♦ CRA-55D	† W-64S or ♦ W-64D	Model 1267
	(LP)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	

† Jewel
♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	Symphonic PART No.	NOTES
M3	Phono Motor Phono Motor	M0-106 M0-107	Specify Alliance Specify General Industries

CHASSIS—TOP VIEW



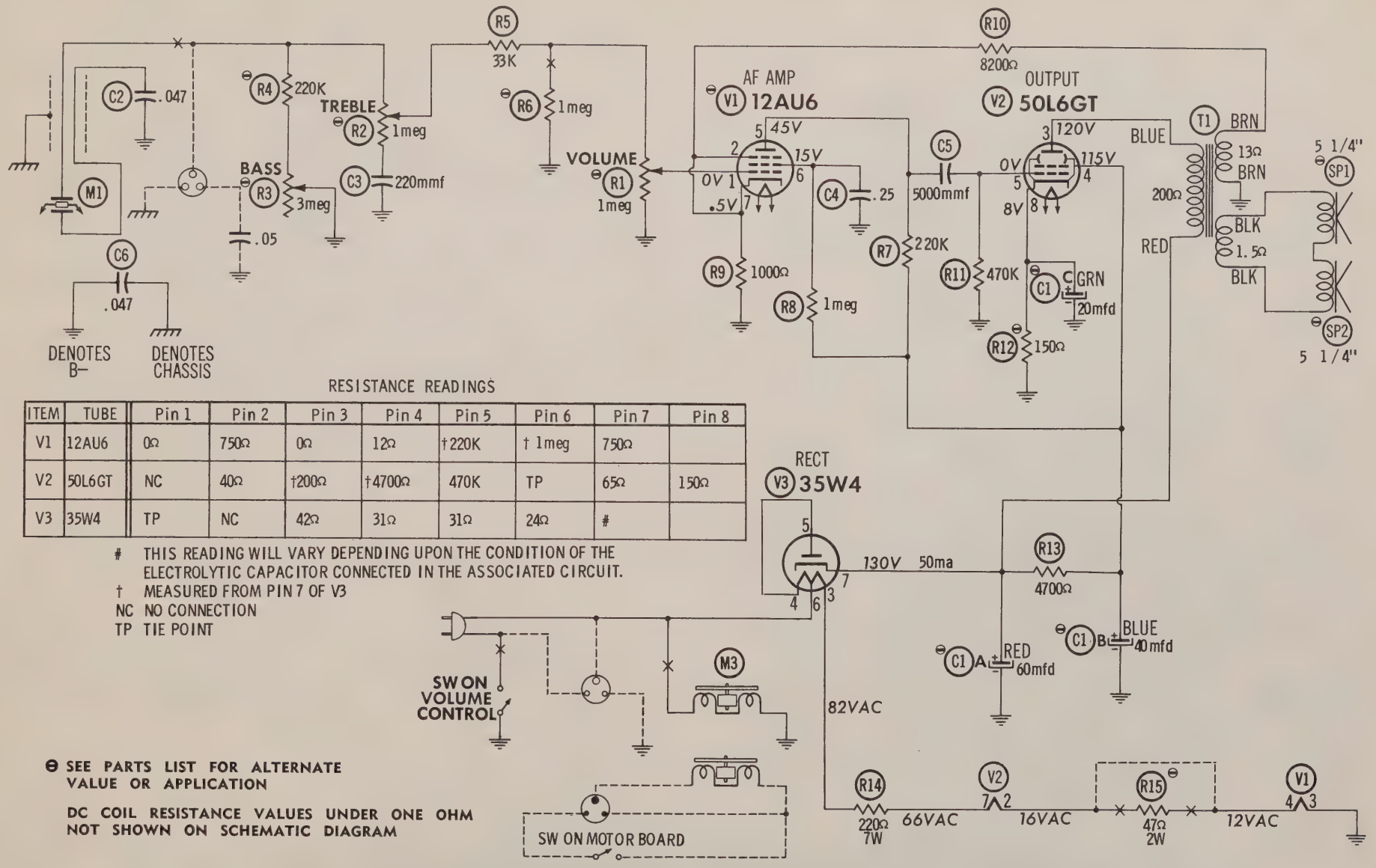
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KN-143	Grey, 3 Used, Model 1233
Knob	KN-144	Mahogany, 3 Used, Model 1233
Knob	KN-150	3 Used, Model 1256
Knob	KN-185	3 Used, Model 1256
Knob	KN-192	Off-On-Volume, Model 1257
Knob	KN-193	Treble, Model 1257
Knob	KN-195	Bass, Model 1257
Knob	KN-197	3 Used, Model 1267

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12AU6	0Ω	750Ω	0Ω	12Ω	†220K	† 1meg	750Ω	
V2	50L6GT	NC	40Ω	†200Ω	†4700Ω	470K	TP	65Ω	150Ω
V3	35W4	TP	NC	42Ω	31Ω	31Ω	24Ω	#	

\# THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

† MEASURED FROM PIN 7 OF V3

NC NO CONNECTION

TP TIE POINT

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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SYMPHONIC MODELS 1233, 1256, 1257, 1267

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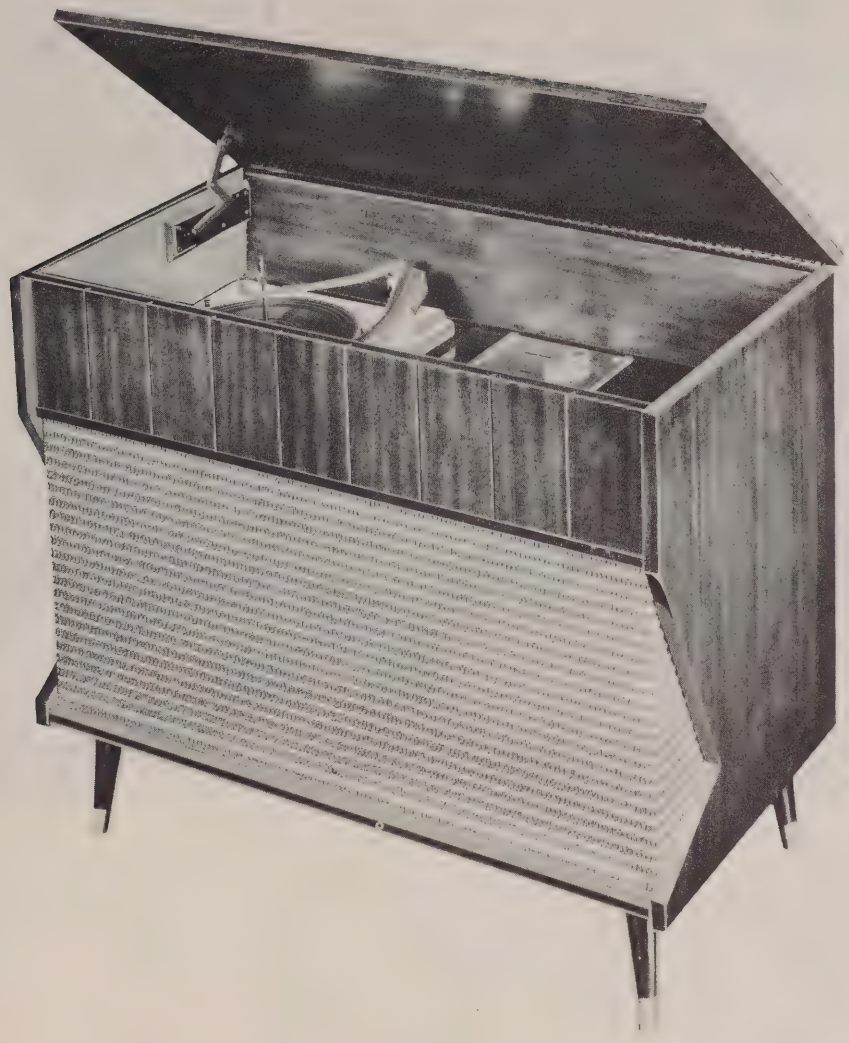
SYMPHONIC MODELS 1260

SYMPHONIC MODELS 1260



SYMPHONIC MODELS 1260

TRADE NAME	Symphonic Model 1260
MANUFACTURER	Symphonic Radio & Electronics Corp., 235 Jersey Ave., New Brunswick, N. J.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES	Five
POWER SUPPLY	110-120 Volts AC, 60 Cycles

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE V-M 1200A - PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10

DISASSEMBLY

1. Remove 14 screws holding rear cover. Remove cover.
2. Remove 5 push-on type control knobs.
3. Remove 4 screws holding control name plate. Remove plate.
4. Locate 2 flat head screws under name plate. Unscrew each screw 6 complete turns.
   CAUTION: Do not remove screws.
5. Remove 2 nuts holding chassis at bottom rear. Remove chassis.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H824

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. - Phase Inv.	12AX7	
V2	AF Amplifier	6AU6	

ITEM No.	USE	TYPE	NOTES
V3	Output	6L6GB	Note 1
V4	Output	6L6GB	Note 1
V5	Rectifier	5U4GB	

Note 1. Alternate type 5881.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYMPHONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	CE-116	AFH4-18-30	C0372 BR505	FP447	TMQ-18 TD-50-50	Q-061	TVLS-4746.6*
B	▲20	450							
C	■20	450							
D	40	50							
C2A	▲40	450	CE-116	AFH4-18-30	C0372 BR505	FP447	TMQ-18 TD-50-50	Q-061	TVLS-4746.6*
B	▲20	450							
C	40	50							
D	■20	450							

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SYMPHONIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	330		CC-126	BPD-00033	DD-331	L10T33	B-333	5GA-T33	
C4	10000		CC-302	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C5	220		CC-114	DI 220	DD-221	L10T22	B-322	5GA-T22	
C6	56		CC-130	DI 56	DD-560	L10Q56	CNO-456	5GA-Q56	
C7	1000		CC-120	BPD-001	DD-102	BYA6D1	B-210	5HK-D1	
C8	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C9	220		CC-114	DI 220	DD-221	L10T22	B-322	5GA-T22	
C10	2000		CC-106	BPD-002	22-202	BYA10D2	B-220	5HK-D2	
C11	20000		CC-105	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C12	2000		CC-106	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C13	100		CC-131	BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	
C14	390		CC-129	DI 390	DD-391	L10T39	B-339	5GA-T39	
C15	.05	400	CP-200	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C16	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C17	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C18	1.0	200		P288N-1.0		CUB2W1	GEM-21	2TM-M1	①
C19	10000		CC-302	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

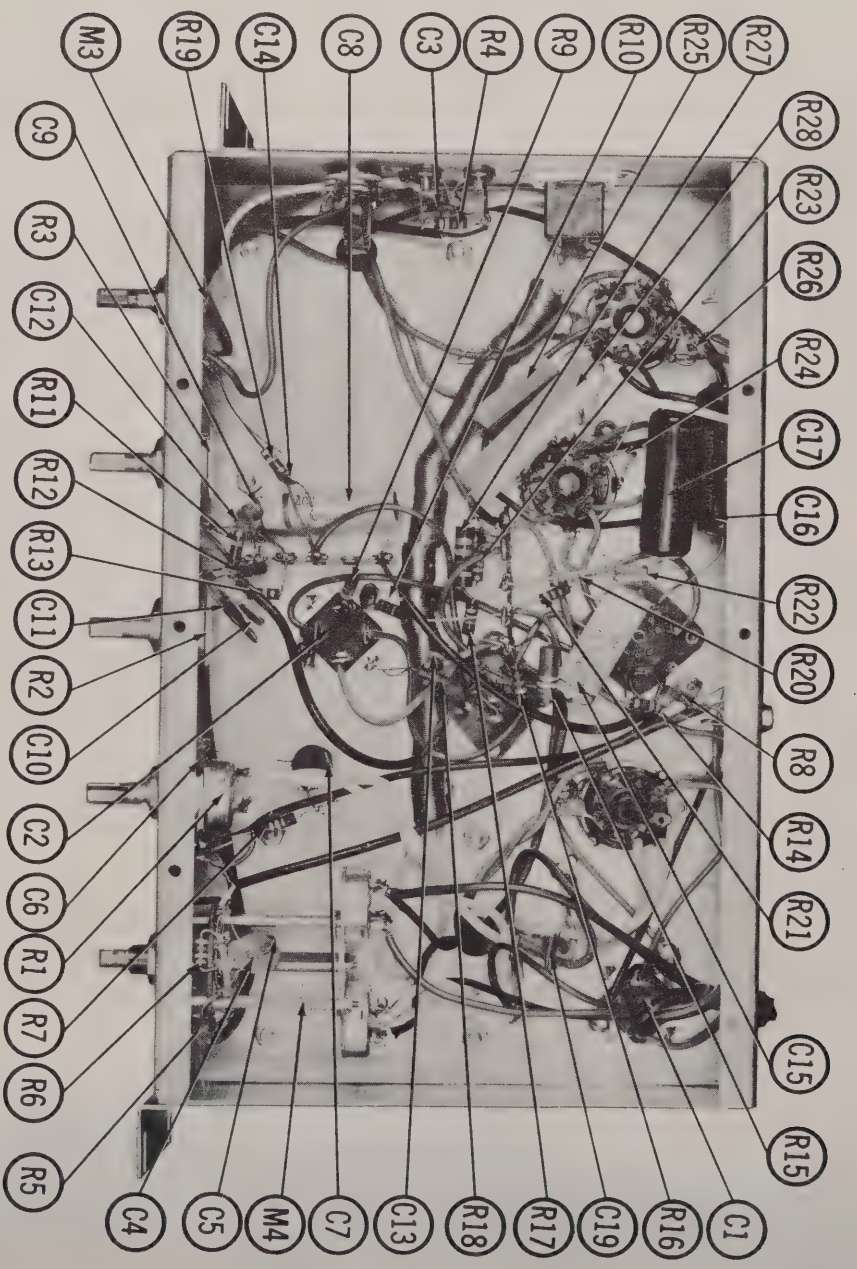
① Some versions may use 1.5mfd in this application (Part #CP-105).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYMPHONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	VC-183	BT-73	A47F-1meg	Q13-137X	UT-438	Loudness, Tap ② 250K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R2A	1meg	½	VC-184	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	1meg	½	VC-184	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.

CHASSIS-BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	SYMPHONIC PART No.	NOTES
R4	470K		RC-216	
R5	180K		RC-226	
R6	470K		RC-216	
R7	56K		RC-218	
R8	1.5meg		RC-234	
R9	180K 5%		RC-226	
R10	18K		RC-246	
R11	100K		RC-225	
R12	10K		RC-108	
R13	100K		RC-225	
R14	3300Ω		RC-204	
R15	270K	1	RC-238	
R16	680K		RC-228	

ITEM No.	RATING OHMS	RATING WATT	SYMPHONIC PART No.	NOTES
R17	27K		RC-245	
R18	1200Ω		RC-232	
R19	4700Ω		RC-200	
R20	470K		RC-216	
R21	47K 5%		RC-308	
R22	1800Ω		RC-240	
R23	47K 5%		RC-308	
R24	470K 5%		RC-309	
R25	270Ω	5	RW-107	
R26	470K 5%		RC-309	
R27	47K	1	RC-504	
R28	12K	10	RW-106	
R29	200Ω			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA SYMPHONIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .88A	740VCT @ .120A	5V @ 2.5A	TR-126				PC8410	24R05U ①	
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 2.9A									

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SYMPHONIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7500Ω CT	6-8Ω	TR-125	Z1405 ①	A-3128 ①		A-3801 ①	24S57 ①	S-60A ①	① Drill new mounting holes

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SYMPHONIC PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	12"	PM	3-4Ω	SP-808	12A6A	
SP2	12"	PM	3-4Ω	SP-808	12A6A	
SP3	5"	PM	14Ω	SP-608	5A15T	
SP4	5"	PM	14Ω	SP-608	5A15T	

PHONO CARTRIDGE

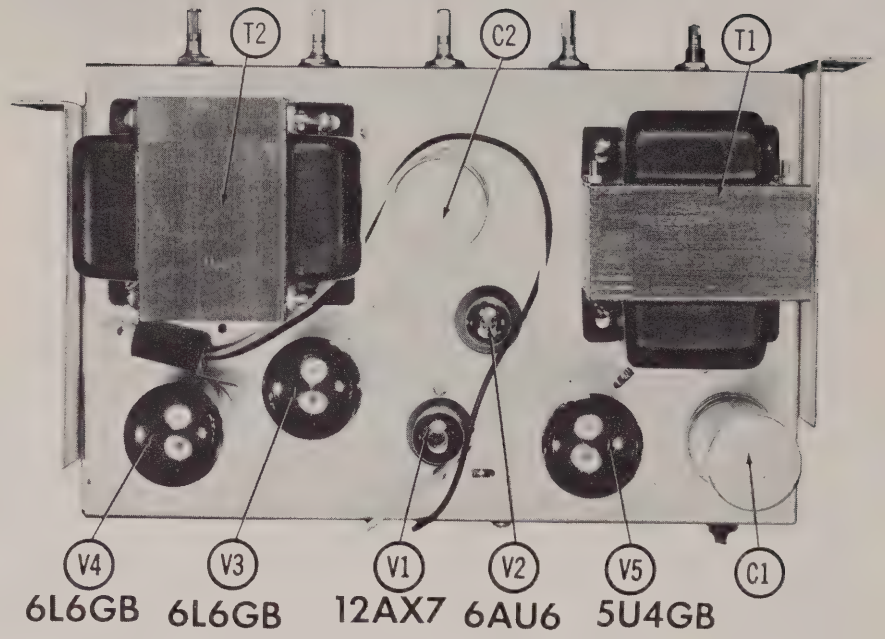
ITEM No.	REPLACEMENT DATA SYMPHONIC PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M1		89-TB				

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA SYMPHONIC PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2		† S-61 or †♦ S-61SD or ♦ S-61D	† W-77TPS or †♦ W-77DS or ♦ W-77TPD	† Jewel ♦ Diamond

CHASSIS-TOP VIEW



MISCELLANEOUS

ITEM No.	PART NAME	SYMPHONIC PART No.	NOTES
M3	Switch	SW-115	Speaker Selector (Rotary, Wafer Type)
M4	Switch	SW-116	Compensation (Rotary, Wafer Type)

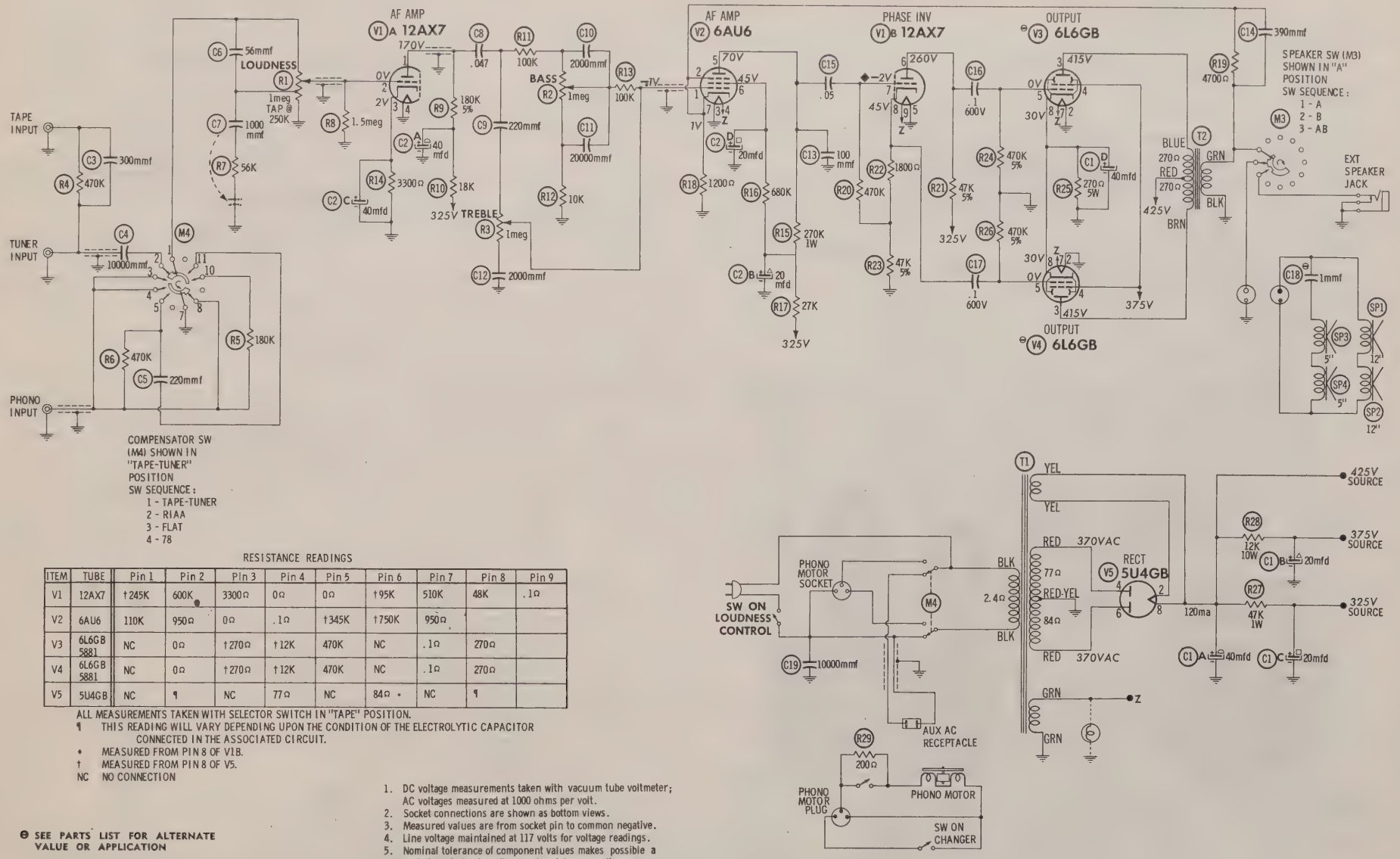
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KN-197	5 used

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†245K	600K	3300Ω	0Ω	0Ω	†95K	510K	48K	.1Ω
V2	6AU6	110K	950Ω	0Ω	.1Ω	†345K	†750K	950Ω		
V3	6L6GB 5881	NC	0Ω	†270Ω	†12K	470K	NC	.1Ω	270Ω	
V4	6L6GB 5881	NC	0Ω	†270Ω	†12K	470K	NC	.1Ω	270Ω	
V5	5U4GB	NC	¶	NC	77Ω	NC	84Ω •	NC	¶	

ALL MEASUREMENTS TAKEN WITH SELECTOR SWITCH IN "TAPE" POSITION.

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

• MEASURED FROM PIN 8 OF V1B.

† MEASURED FROM PIN 8 OF V5.

NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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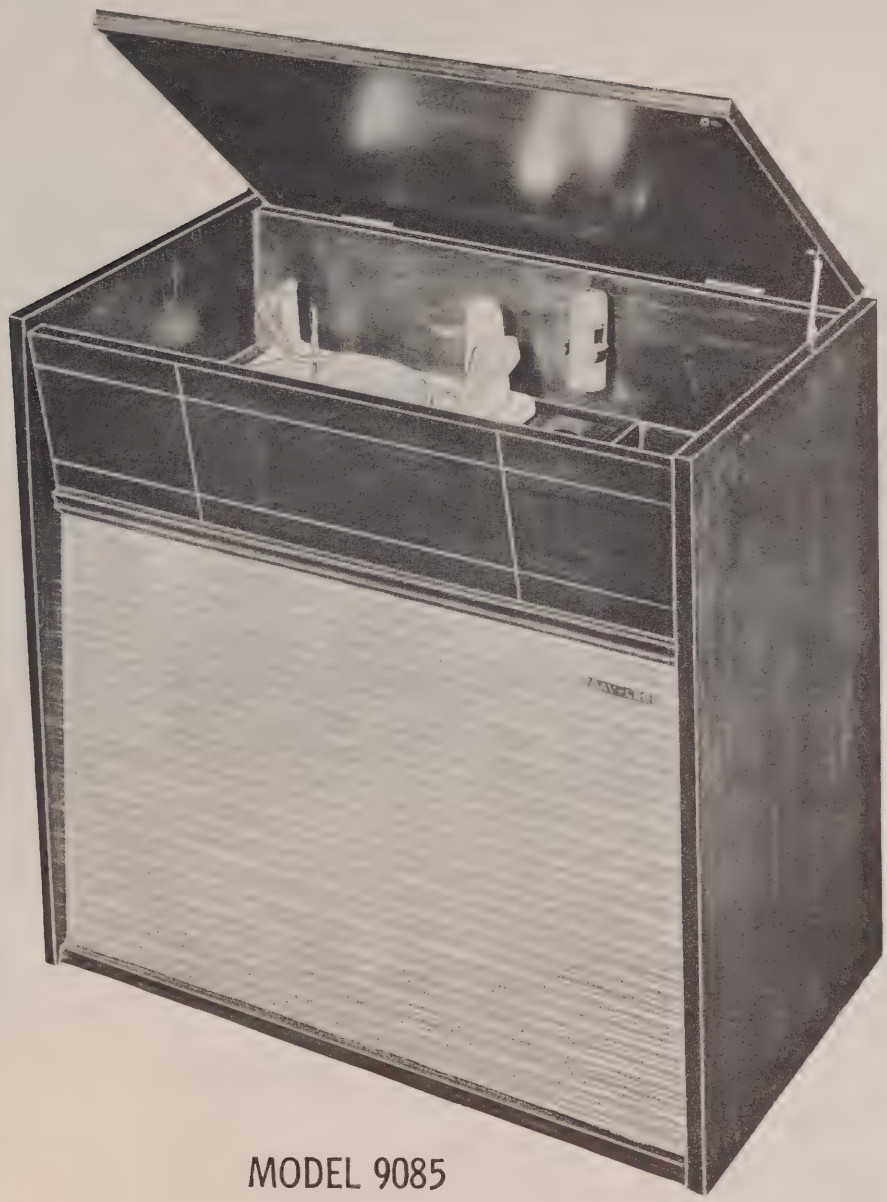
SYMPHONIC MODELS 1260

PHOTOFACT* Folder

TRAV-LER MODELS 9064A, B, 9085

TRAV-LER MODELS
9064A, B, 9085



MODEL 9085

TRAV-LER MODELS
9064A, B, 9085

TRADE NAME	Trav-Ler Models 9064A, 9064B, 9085
MANUFACTURER	Trav-Ler Radio & Tel Corp., 571 W. Jackson Blvd., Chicago, Illinois
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES	Four
POWER SUPPLY	110 - 125 Volts A C - 60 Cycles RATING 44 Watts, .47Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR MONARCH UA8 - PHOTOFACT SET 381 FOLDER 11.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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H769

SET 434 FOLDER 16

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	6C4	
V2	AF Amp. -Phase Inv.	12AX7	

ITEM No.	USE	TYPE	NOTES
V3	Output	50L6GT	
V4	Output	50L6GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	20	300	EC-70 ①	PRS450V20	BR2035	TC65	TD20-350	MT-4520	TVA-1608
C2A▲	40	300	EC-69 ②	AFH4-02-10	D0020	FP419.5	TMT-23	T-102	R2478 *
B■	40	300							
C▲	40	300							

① Not used in Models 9064A, B.
② Models 9064A, B use 40-40-40mfd@150-150-150 volts (Part #EC-29).
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA TRAV-LER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C4	.047	200		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C5	220			SI220	D6-221	LT6T22	UC-5322	5GA-T22	
C6	.047	200		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C7	3900			DI-0039	DD-392	L10D39			
C8	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C9	4700			BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C10	3300			BPD-0033	DD-332	BYA10D33	UC-5233	5GA-D33	
C11	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C13	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C14	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	Note 1
C15	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	Note 1
C16	4700			BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	Note 1
C17	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	Note 1
C18	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	

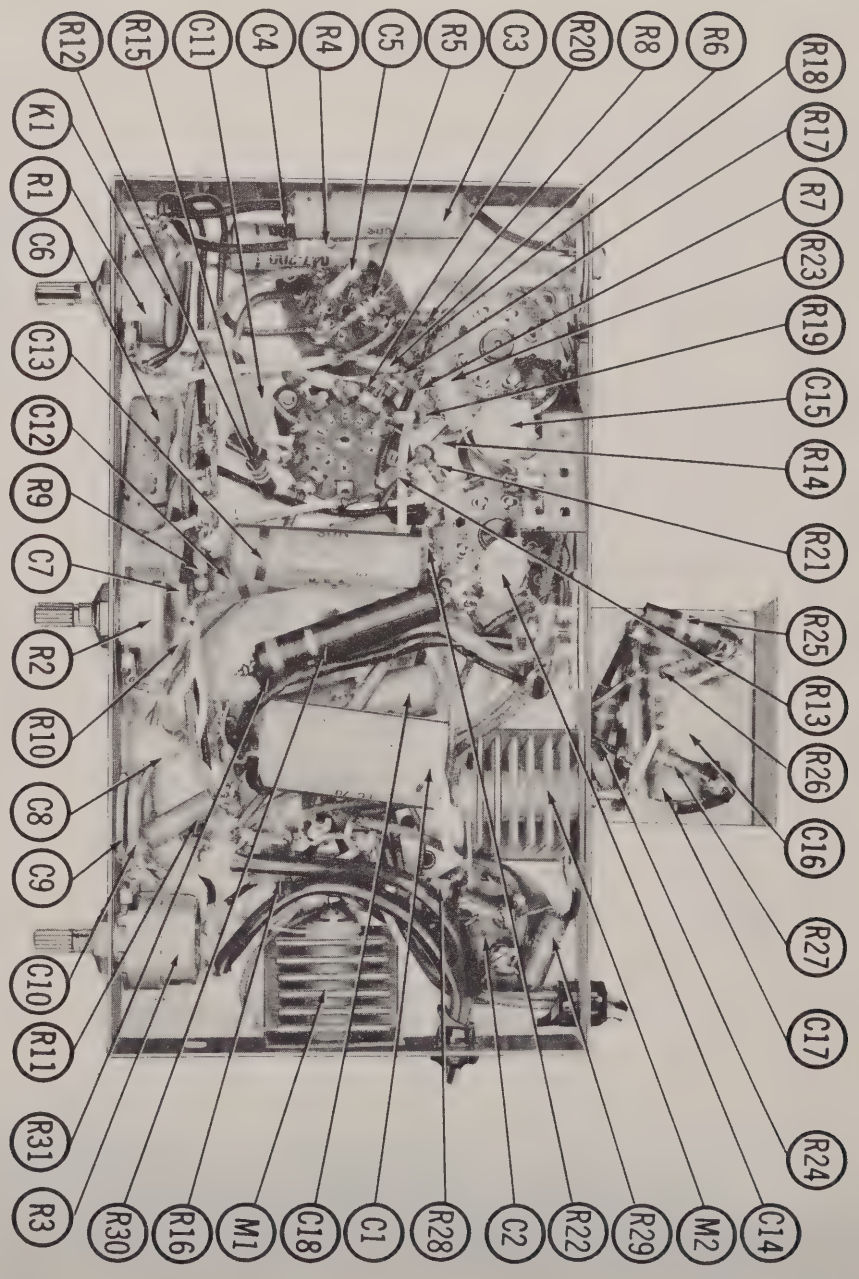
Note 1. Not used in model 9064A.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRAV-LER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	VC-113 ①	C1-70		Q18-137XX	UDT-289	Loudness, Taps @300K & 500K
B	Shaft			Not Req.		Not Req.	Not Req.	
R2A	1meg	½	VC-45	B-69	A47-1meg-S	Q11-137	U54	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	1meg	½	VC-44	B-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.
① Part #VC-46 (No Taps) used in Models 9064A, 9064B.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	TRAV-LER PART No.	NOTES
R4	330K			Note 1
R5	470K			
R6	68K			Note 2
R7	68K			Note 3
R8	1500Ω			
R9	100K			Note 4
R10	100K			Note 3
R11	18K			
R12	470K			
R13	100K			Note 3
R14	100K			Note 4
R15	2200Ω			
R16	33K			
R17	470K			

Note 1. Model 9064A uses 220K, Model 9064B uses 1meg.
Note 2. Some versions use 150K.
Note 3. Not used in some versions.

ITEM No.	RATING OHMS	RATING WATT	TRAV-LER PART No.	NOTES
R18	56K			
R19	100K			Note 4
R20	100K			Note 3
R21	10K			
R22	470K			
R23	100Ω			
R24	10K	1		Note 5
R25	10K	1		Note 5
R26	6.8meg			Note 5
R27	6.8meg			Note 5
R28	270Ω	1		
R29	18K	1		
R30	30Ω	2		Note 6
R31	30Ω	2		Note 3

Note 4. Some versions use 220K.
Note 5. Not used in Model 9064A.
Note 6. Some versions use 22Ω.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA TRAV-LER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	6500Ω CT	8Ω SEC 2 1-2Ω	AT-26 ①							① Model 9085 ② Models 9064A, 9064B
	5600Ω CT	3-4Ω	AT-12 ②	Z1011	A-2935	AU-609	A-3830	24S55	S-55X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA TRAV-LER PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	10"	PM	3-4Ω	SPK-61 ①	10A6A	① Used in Model 9085
SP2	10"	PM	3-4Ω	SPK-61 ①	10A6A	② Used in Model 9064A
SP3		Electrostatic		SPK-54 ①		
SP4		Electrostatic		SPK-54 ① ③		③ Two used in Model 9064B
	10"	PM	3-4Ω	SPK-31 ②		
	6"	PM	3-4Ω	SPK-27 ② ③	6A1	
	3"	PM	3-4Ω	SPK-28 ②	3A15TZ4.7	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRAV-LER PART No.	REPLACEMENT DATA
K1	Tone Compensation Circuit	2500mmf, 2500mmf 50mmf, 100mmf 100K, 100K	①	Centralab PC-325 Sprague TC-5

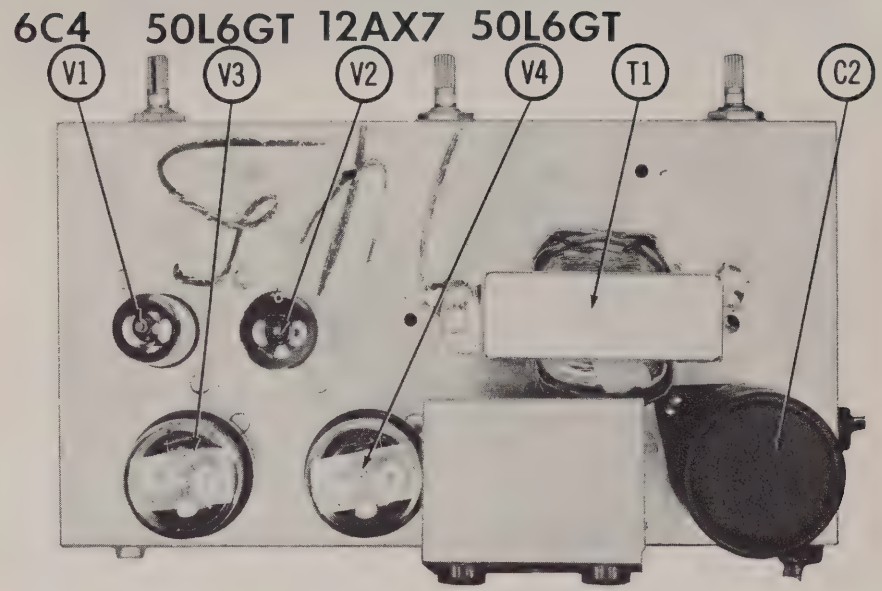
① Not used in Models 9064A, 9064B.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA TRAV-LER PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.09A	SR-11 ①	1235AH ④	T150 SD-92 ③	100A K200 ③	③ Silicon Type ④ 2 Used
M2	.09A	SR-11 ②	1235AH ④	T150 SD-92 ③	100A K200 ③	

① Models 9064A, 9064B use Part #SR-4.
② Not used in Models 9064A, 9064B.

CHASSIS—TOP VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA TRAV-LER PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M3		55-T or 81-TB	GD-J			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

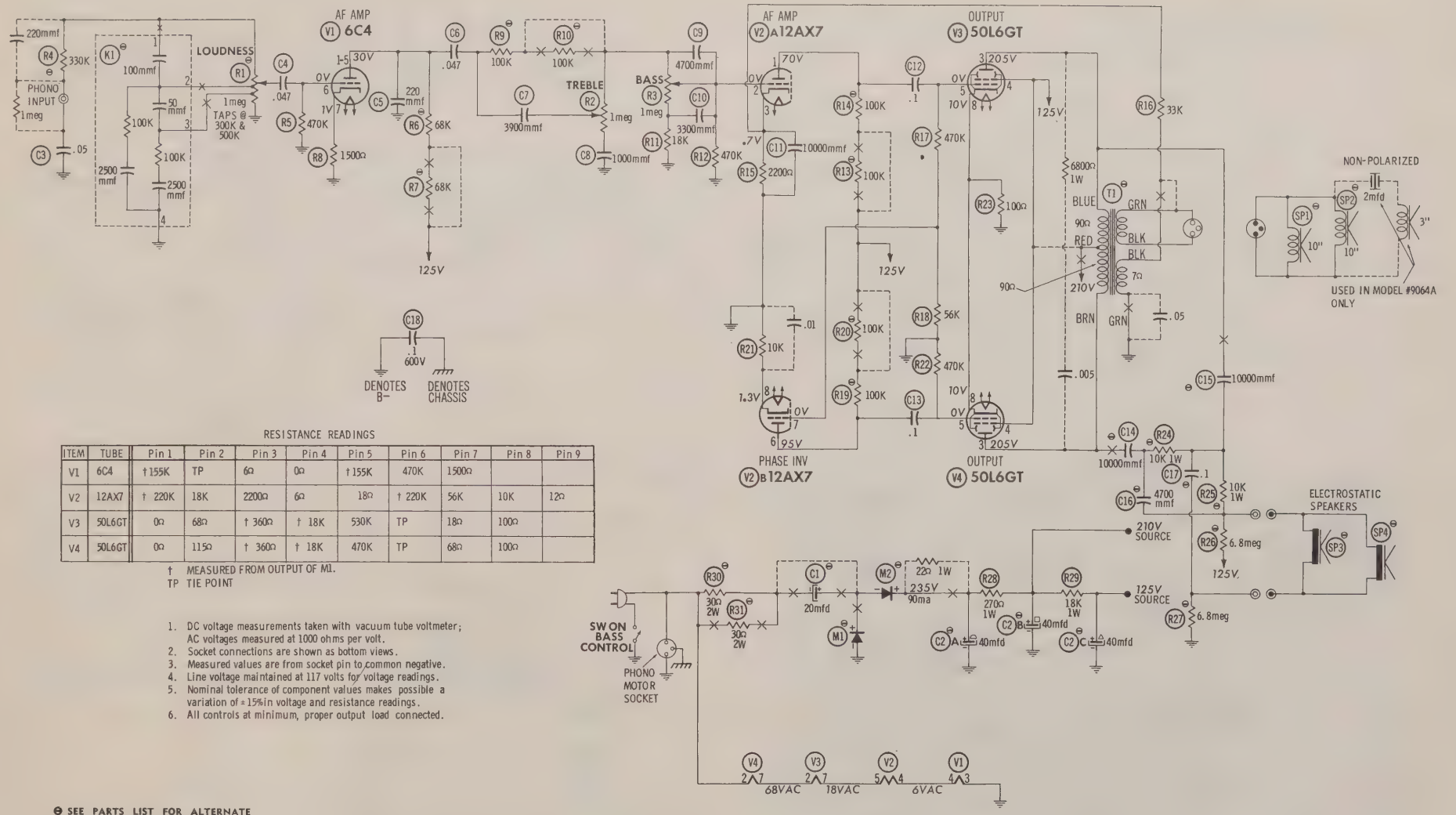
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA TRAV-LER PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M4		† S-66 or †♦ S-66SD ♦ S-66D	† W-75TPS or †♦ W-75DS or ♦ W-75TPD	† Jewel ♦ Diamond

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6C4	†155K	TP	6Ω	0Ω	†155K	470K	1500Ω		
V2	12AX7	† 220K	18K	2200Ω	6Ω	18Ω	† 220K	56K	10K	12Ω
V3	50L6GT	0Ω	68Ω	† 360Ω	† 18K	530K	TP	18Ω	100Ω	
V4	50L6GT	0Ω	115Ω	† 360Ω	† 18K	470K	TP	68Ω	100Ω	

† MEASURED FROM OUTPUT OF M1.
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TRAV-LER MODELS 9064A, B, 9085

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

TRUETONE
MODELS DC2980A, DC2981A

TRUETONE
MODELS DC2980A, DC2981A

MODEL DC2980A

TRUETONE
MODELS DC2980A, DC2981A

TRADE NAME	Truetone Models DC2980A, DC2981A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City 8, Missouri
TYPE SET	AC-DC Operated AM Receiver
TUBES	Four
POWER SUPPLY	110-120 Volts AC-DC
RATING	25Watts, .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 - 1650 KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	Highside to antenna Stator lug of tuning gang. Low side to B-	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.	"	"	1650KC	"	"	A3	"
3.		Loop	1500KC	Tune for 1500KC Signal	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2 & 3.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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H800

SET 434 FOLDER 17

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12AU6	
V2	Det.-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V3	Output	50C5	
V4	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150	150-141	PRS150V503	BBRT84215				R2395 *
B	30	150		010					
C	10	150							

* Not normally in distributors stock. Available through distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	50		156-107	SI50	D6-500	LT6Q5	UC-545	5GA-Q5	①
C3	3.5							5TCCB-V35S 5%*	5% ②
C4	10000		158-102	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C5	.05	400	152-111	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C6	.05	400	152-111	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

① Some versions may use 47mmf in this application.
② Some versions may use 6.8mmf (Part #168-102) and some versions may omit this part.
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	120-117	B-76	A47-2meg-Z	Q13-139	U55	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	

* Use KR with CRL "Red Label" controls and KB with "Blue Label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

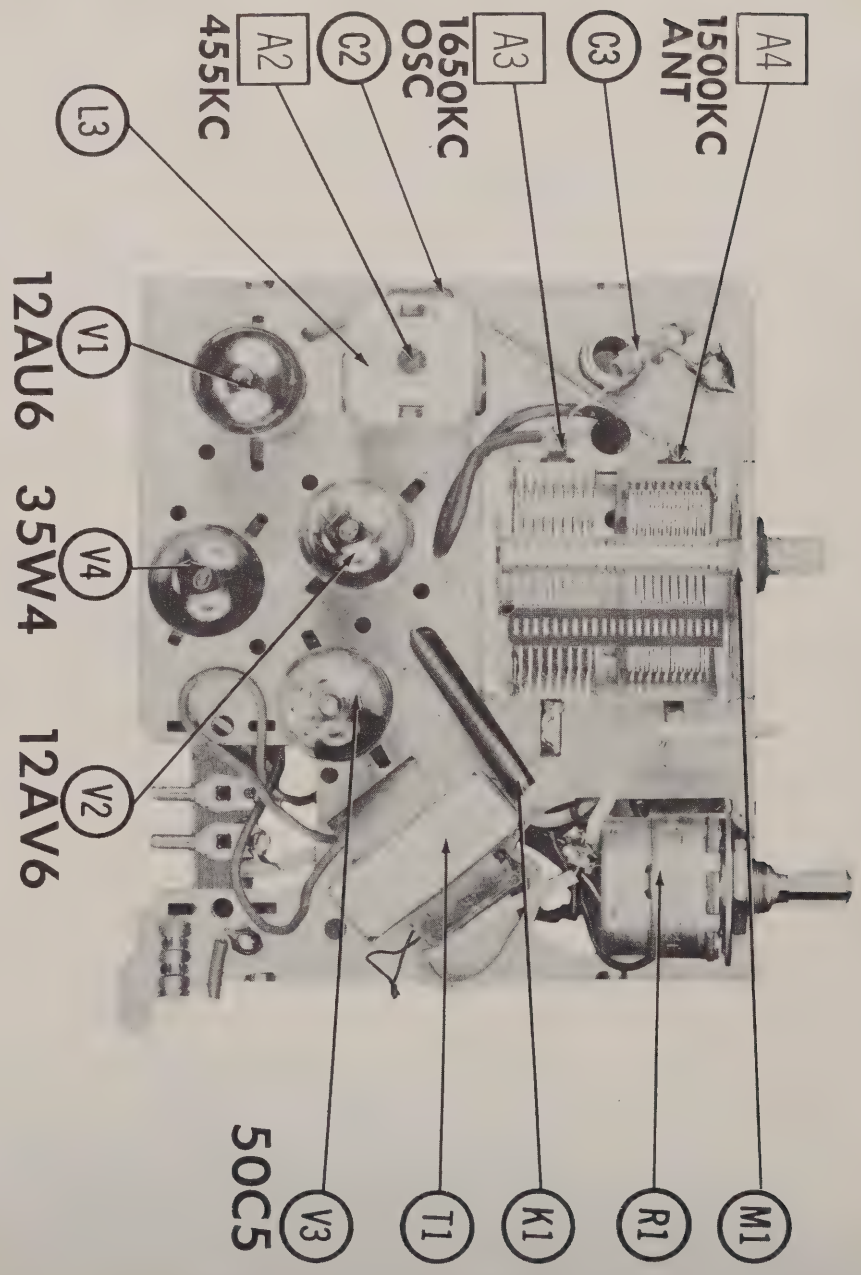
ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R2	2.2meg		180-107	
R3	150Ω		180-111	

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R4	2200Ω	1	180-101	
R5	47Ω	1	180-185	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick	134-112					
L2	Osc. Coil	136-139					
L3	IF Trans	130-106	16-6764				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2200Ω	3-4Ω	138-130	Z1101①	A-3025①	AU-605①	A-3332①	24S53 ①	S-12X ①	① Rotate 90 degrees and use original channel frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	175-137	4A05	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA
K1	Audio Circuit	220mmf, 250mmf, 250mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg.	166-111	Aerovox PA-113-2 Centralab PC-151 Cornell-Dubilier 116TM2 Sprague DT-2

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M1	Tuning Cap.	160-129	2 Gang, (Ant. 7-240mmf., Osc. 10-144mmf.)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

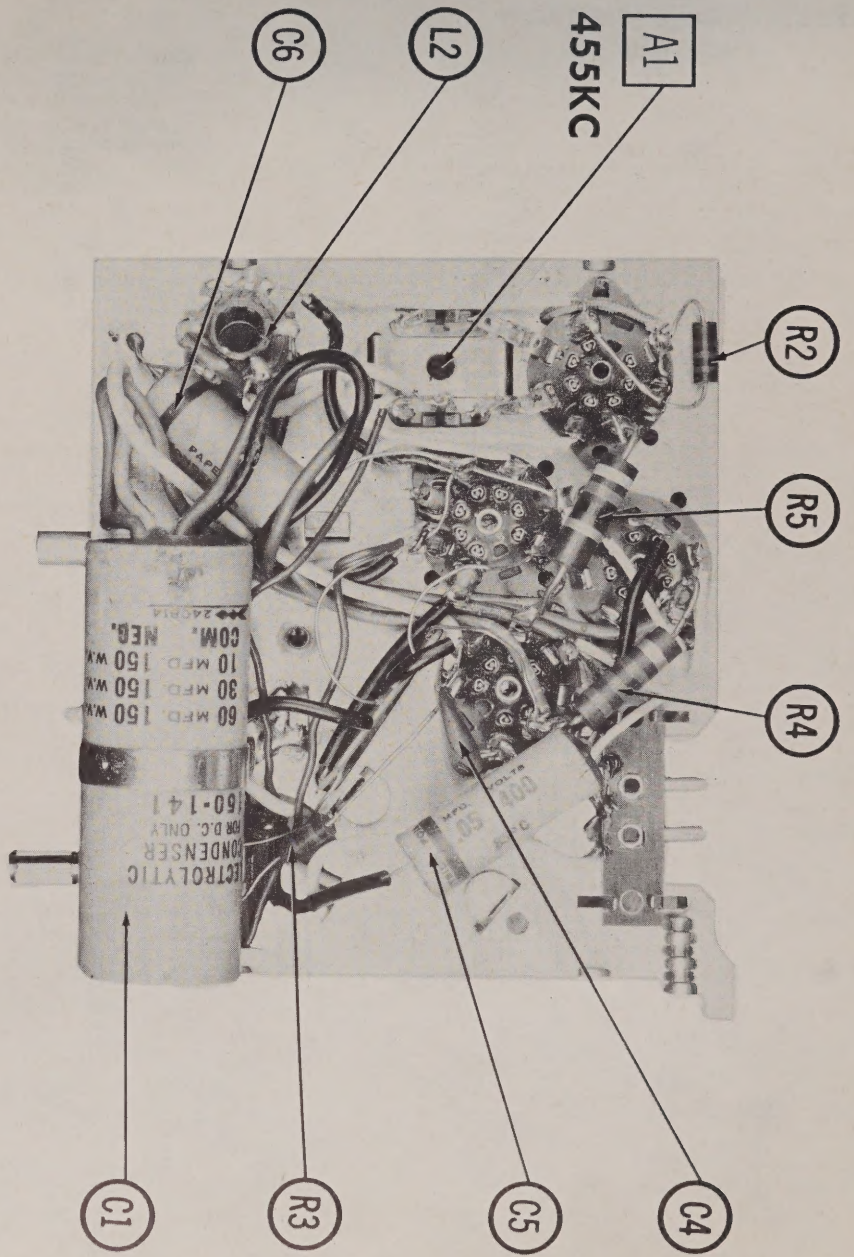
NAME	PART NO.	DESCRIPTION
Knob	220-152	Tuning
Knob	220-122	On-Off-Volume
Cabinet	210-142R	Red, Includes Dial
Cabinet	210-142W	White, Includes Dial
Dial Insert	215-164	

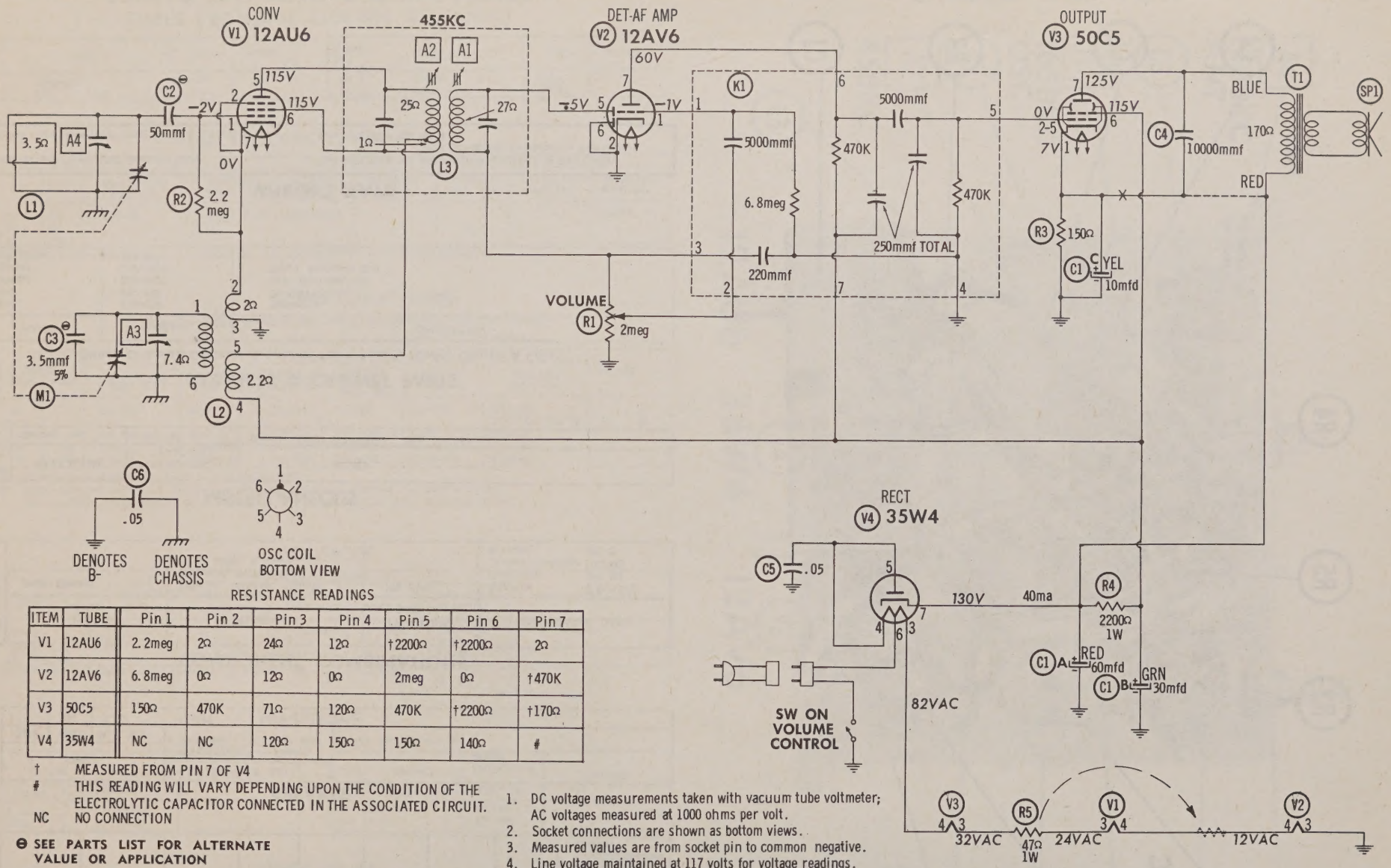
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AU6	2.2meg	2Ω	24Ω	12Ω	†2200Ω	†2200Ω	2Ω
V2	12AV6	6.8meg	0Ω	12Ω	0Ω	2meg	0Ω	†470K
V3	50C5	150Ω	470K	71Ω	120Ω	470K	†2200Ω	†170Ω
V4	35W4	NC	NC	120Ω	150Ω	150Ω	140Ω	#

† MEASURED FROM PIN 7 OF V4

THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

NC NO CONNECTION

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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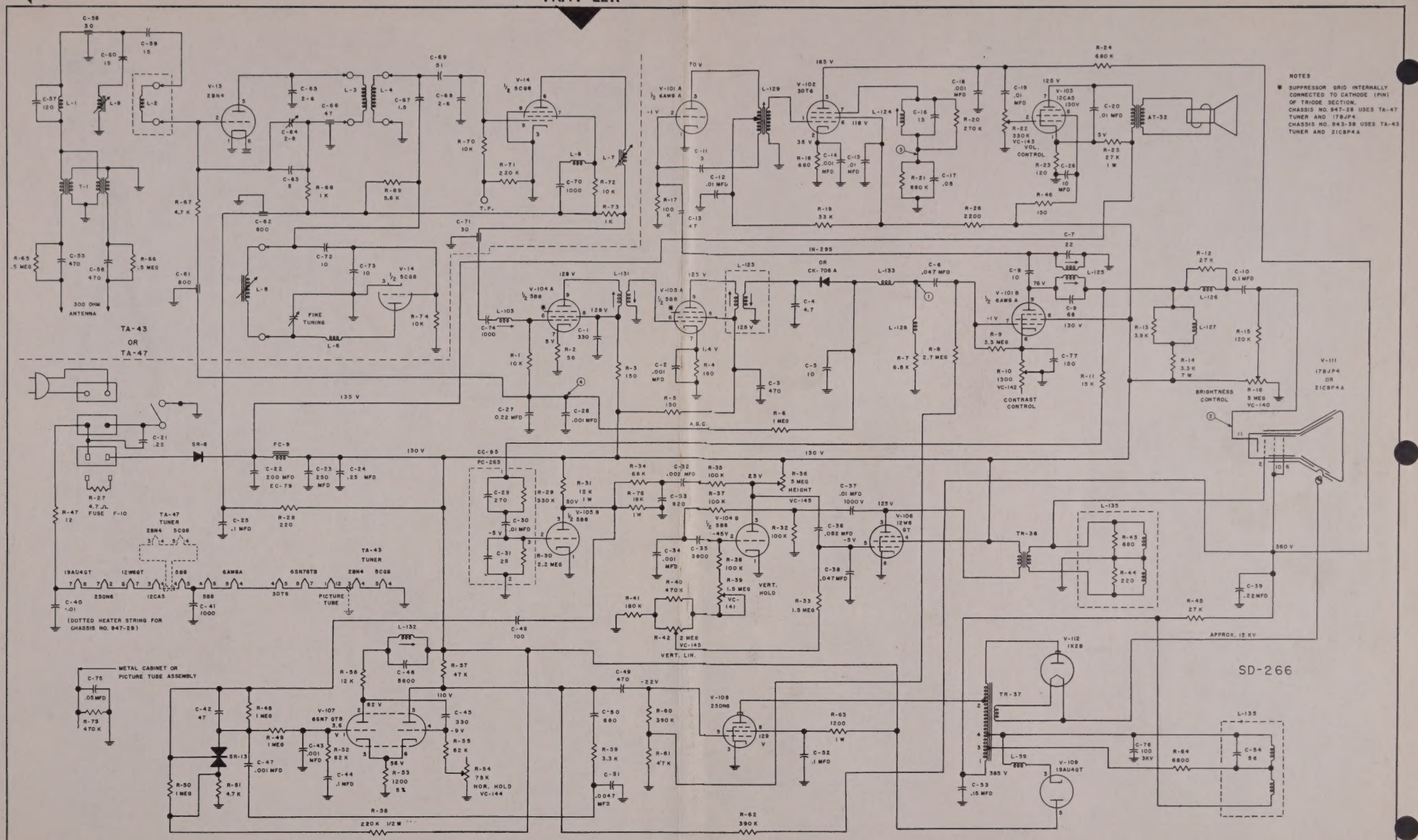
TRUETONE
MODELS DC2980A, DC2981A



TRAV-LER MODELS 721-K-751, 721-T-741, 1721A (Ch. 943-38, 947-28)

Schematic Diagram Courtesy of TRAV-LER RADIO CORP.

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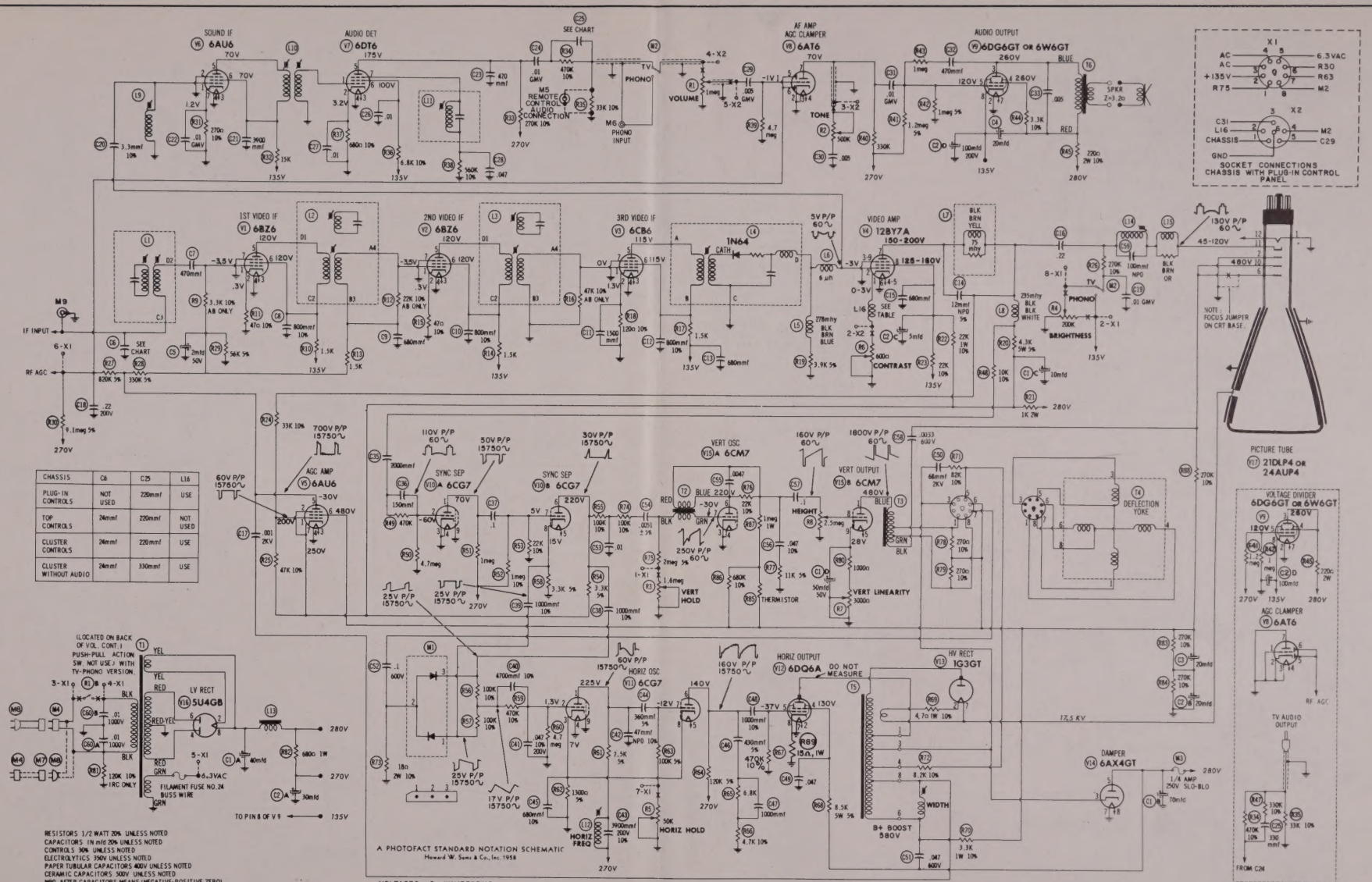

CHASSIS	C6	C25	L16
PLUG-IN CONTROLS	NOT USED	220mmf	USE
TOP CONTROLS	24mmf	220mmf	NOT USED
CLUSTER CONTROLS	24mmf	220mmf	USE
CLUSTER WITHOUT AUDIO	24mmf	330mmf	USE

RESISTORS 1/2 WATT 20% UNLESS NOTED
CAPACITORS IN mfd 20% UNLESS NOTED
CONTROLS 30% UNLESS NOTED
ELECTROLYTICS 350V UNLESS NOTED
PAPER TUBULAR CAPACITORS 400V UNLESS NOTED
CERAMIC CAPACITORS 500V UNLESS NOTED
NPO AFTER CAPACITORS MEANS (NEGATIVE-POSITIVE ZERO) CAPACITANCE CHANGE OVER A WIDE RANGE OF TEMPERATURE
GMV MEANS GUARANTEED MINIMUM VALUE.
CONNECTIONS SHOWN IN DOTTED LINES REFER TO PIN CONNECTIONS ON SOCKETS X1 & X2 ON CHASSIS USING PLUG-IN CONTROL PANEL ASSEMBLY.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VOLTAGES & WAVEFORMS
ALL WAVEFORMS AND P/P VOLTAGES MEASURED WITH AVERAGE SIGNAL INPUT, CONTROLS ADJUSTED FOR NORMAL TV OPERATION, CONTRAST AT MAX. D.C. VOLTAGES MEASURED WITH V.T.V.M. FROM CHASSIS GROUND, NORMAL TV OPERATION, LINE VOLTAGE 117V. VOLTAGE TOLERANCES ±20% NORMAL.

Schematic Diagram Courtesy of MAGNAVOX CO.

MAGNAVOX CHASSIS U29-01, -02, -03, -04, -05, -06, -07, -08, V29-01, -02, -03, -04, -05, -06, -07, -08